S
628.161
M26agwsr
2001

RECEIVED
MAR 07 2002
Department of
Environmental Quality
Remediation Division

2001 ANNUAL GROUND WATER SAMPLING REPORT
LIVINGSTON RAIL YARD
LIVINGSTON, MONTANA

Submitted to:

Montana Department of Environmental Quality
Superfund Program
P.O. Box 200901
Helena, Montana 59620-0901

Submitted by:

The Burlington Northern Santa Fe Railway Company
8204 East Park Meadows Drive
Lone Tree, Colorado 80124

Prepared by:

Envirocon, Inc.
P.O. Box 8243
Missoula, Montana 59807

STATE DOCUMENTS COLLECTION
MAR 18 2002
MONTANA STATE LIBRARY
1515 E. 6th AVE.
HELENA, MONTANA 59620

Submittal Date:

March 4, 2002

ENVIROCON

MONTANA STATE LIBRARY
3 0864 0015 3404 2

Montana Department of
ENVIRONMENTAL QUALITY

Judy Martz, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.state.mt.us

March 13, 2002

MT State Library
Capital Complex
Helena, MT 59620

Subject: 2001 Annual Groundwater Sampling Report

Dear Repository Manager:

Enclosed please find one complete copy of the 2001 Annual Groundwater Sampling Report for the Burlington Northern Livingston Shop Complex, Livingston Montana.

If you have any questions or concerns, please feel free to contact me at 1-800-246-8198 or 406-444-3132.

Sincerely,

Mandy Cunningham

Mandy Cunningham
Project Officer
Remediation Division
Montana Department of Environmental Quality

Enclosure

Digitized by the Internet Archive
in 2015

https://archive.org/details/annualgroundwate2001mont

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1

2.0 INTRODUCTION 2

3.0 ANNUAL & SEMI-ANNUAL GROUND WATER SAMPLING EVENTS 3

- 3.1 Sampling Protocol 3
- 3.2 May 2001 Annual Ground Water Sampling Event 4
- 3.3 November 2001 Semiannual Ground Water Sampling Event 5

4.0 SAMPLE RESULTS AND DISCUSSION 5

- 4.1 Ground Water VOC Sample Results 6
  - 4.1.1 MDEQ Split Sample Results 7
  - 4.1.2 VOC Concentration Declines 7
- 4.2 Natural Attenuation Parameter Results 8
- 4.3 Free-Product Thickness Measurements 9
- 4.4 Ground Water Static Water Level Measurements 10

5.0 CONCLUSIONS 11

LIST OF TABLES

1.0 Ground Water Schedule: MDEQ-Approved February 1996

1.1 May and November 2001 Ground Water Samples Collected

2.0 PCE Analytical Results To-Date

3.0 TCE Analytical Results To-Date

4.0 Cis-1,2-DCE Analytical Results To-Date

5.0 Other Compounds Detected

5.1 MDEQ Split Sample Results Versus BNSF Sample Results

6.0 Apparent Free-Product Thickness Measurements To-Date

7.0 May 2001 Static Water Level Measurements

8.0 December 2001 Static Water Level Measurements

9.0 Well Construction Table

LIST OF FIGURES

1.0 Ground Water Monitoring Network Locations
2.0 May 2001 PCE Concentrations
3.0 November 2001 PCE Concentrations
4.0 May 2001 TCE Concentrations
5.0 November 2001 TCE Concentrations
6.0 May 2001 cis-DCE Concentrations
7.0 November 2001 cis-DCE Concentrations
8.0 Decline in TCE Concentrations for Well L-88-10
9.0 Decline in PCE Concentrations for Well L-88-10
10.0 Decline in PCE Concentrations for Well 89-4
11.0 Decline in PCE Concentrations for Well L-88-13
12.0 Decline in PCE Concentrations for Well 92-4
13.0 Decline in PCE Concentrations at Well 89-6
14.0 Decline in PCE Concentrations at Well 92-2
15.0 Decline in PCE Concentrations at Well LS-11
16.0 Decline in PCE Concentrations at Well 89-3
17.0 Decline in PCE Concentrations at Well L-87-5
18.0 Decline in PCE Concentrations at Well 89-9
19.0 Decline in PCE Concentrations at Well L-87-3
20.0 Decline in PCE Concentrations at Well 90-3
21.0 Apparent Free-Product Thickness Measurements – May & December 2001
22.0 Potentiometric Ground Water Surface – May 2001
23.0 Potentiometric Ground Water Surface – December 2001
24.0 Approximate Area of Livingston Aquifer and Underlying Bedrock

LIST OF APPENDICES

APPENDIX A - Laboratory Analytical Results

APPENDIX B - Data Validation Report

1.0 EXECUTIVE SUMMARY

This report presents the results of the May and November 2001 ground water sampling events at the Burlington Northern Livingston Shop Complex, which contains the Livingston Rail Yard (LRY) in Livingston, Montana. Subsurface soils contain petroleum hydrocarbons which are present in the smear zone associated with the free-product plume, in areas where USTs and piping were removed, and where diesel fuel handling was conducted. Locomotive maintenance and waste-water handling operations also resulted in the presence of chlorinated volatile organic compounds (VOCs) in soils at specific areas around the LRY. In addition, a ground water plume containing dissolved chlorinated VOCs is located beneath and downgradient of the site.

All ground water sampling is conducted according to the Interim Remedial Measures Work Plan (IRMWP), Envirocon, April 1989 and adheres to the ground water sampling schedule approved by the MDEQ in February 1986. The May 2001 annual sampling event included sampling 29 monitoring wells, with all 29 samples analyzed for VOCs. The November 2001 semiannual sampling round included sampling 16 monitoring wells, with all 16 samples analyzed for VOCs.

May and November 2001 ground water samples contained dissolved chlorinated-VOC concentrations that continued the long-term declines observed during the past 12 years of ground water monitoring. In general, VOC concentrations in ground water have declined more than 90 percent since May 1989.

Of the 30 wells measured for petroleum free product in May and the 38 wells measured in November/December, two-thirds contained less than one-tenth-foot total apparent product thickness. Assuming that apparent product thickness in the monitoring well is 2 to 4 (or more) times the actual thickness, this indicates that the majority of the petroleum free-product plume is less than one inch thick.

Natural attenuation processes occurring at the site include a variety of physical, chemical and biological processes that act to reduce the mass, toxicity, mobility, volume, or concentration of petroleum in soil and ground water. Natural attenuation parameter (NAP) analyses were conducted in the past and, by 1999, sufficient NAP data had been collected to demonstrate that biodegradation is consistently occurring; NAP analyses were therefore discontinued.

2.0 INTRODUCTION

This report is submitted to the Montana Department of Environmental Quality (MDEQ) by The Burlington Northern and Santa Fe Railway Company (BNSF). It presents the results of ground water samples and petroleum free-product thickness measurements collected during the May 2001 annual and November 2001 semiannual sampling rounds at the LRY, Livingston Montana.

The LRY is located in the northeast part of the city of Livingston, Montana, as shown on Figure 1.0. It was constructed in 1883 by the Northern Pacific Railroad (NPRR) and, except for an 18-month period during 1986 and 1987, has operated continuously since that time. Subsurface soils contain petroleum hydrocarbons which are present in the smear zone associated with the free-product plume, in areas where USTs and piping were removed, and where diesel fuel handling was conducted. Locomotive maintenance and waste-water handling has also resulted in the presence of chlorinated VOCs in soils at specific areas around the rail yard. In several places these chlorinated VOCs reached the underlying aquifer and created a plume of dissolved chlorinated VOCs in the ground water beneath and downgradient of the site.

The Burlington Northern Railroad (BNRR), the successor to NPRR and predecessor to BNSF, began environmental investigations at the LRY in October 1985. Since 1989, the LRY has been investigated and remediated under a Modified Partial Consent Decree (MPCD) between BNRR (later BNSF) and the MDEQ. The MPCD, signed by Charles C. Lovell, U.S. District Judge on April 27, 1990, specifies the process by which the investigation and remediation of environmental conditions at the LRY will proceed. Regularly scheduled ground water monitoring has continued since May 1989.

The LRY is underlain by an alluvial aquifer composed of coarse-grained sand and gravel. This aquifer is herein referred to as the Livingston aquifer. Beneath most of the LRY, the aquifer water table is 15 to 25 feet below ground surface. The saturated thickness of the aquifer ranges from 10 feet to more than 50 feet.

Section 3.0 of this report presents the number of samples collected, sample dates, and analytical methods used for the May and November 2001 sampling events. Section 4.0 presents the analytical results of these ground water samples. Tabulated analytical results are attached, together with figures depicting the approximate lateral extent of dissolved chlorinated VOCs during both sampling events. The long-term declines in VOC concentrations are illustrated using graphs of chlorinated VOC concentrations from ground water samples collected at specific wells since May 1989.

3.0 ANNUAL & SEMI-ANNUAL GROUND WATER SAMPLING EVENTS

The May and November 2001 sampling rounds were conducted in accordance with the ground water sampling schedule approved by MDEQ in February 1996 and presented as Table 1.0. That sampling schedule specifies sampling 12 monitoring wells during semiannual sampling events (November) and thirty monitoring and private wells during annual sampling events (May). A damaged well (MW-8) was removed from the schedule by a faxed communication to MDEQ on November 6, 2000, reducing the scheduled annual sampling locations to 29 wells. Table 1.1 lists the May and November 2001 sample numbers, sample locations, sample dates, and sample analyses.

The May and November 2001 sampling locations are shown on Figure 1.0. Tables 2.0, 3.0, and 4.0 summarize analytical results for tetrachloroethene (PCE); trichloroethene (TCE); and cis-1,2-dichloroethene (DCE), respectively. Figures 2.0 through 7.0 depict the lateral distribution of PCE, TCE, and DCE. Laboratory analytical results are presented in Appendix A. A data validation report is included as Appendix B.

3.1 Sampling Protocol

Sampling protocol was followed as specified in the Interim Remedial Measures Work Plan, Envirocon, April 1989. Four types of wells were sampled:

- City municipal well ('B' Street),
- Private irrigation well containing a submersible pump (Rainbow Motel),
- PVC monitoring wells containing a dedicated bladder pump, or
- PVC monitoring wells (without dedicated pump) which were hand bailed.

All wells, other than the private irrigation well, have locked wellheads. When sampling any of the wells, the wellhead was unlocked, latex gloves were donned, the water level probe was decontaminated, the wellhead was opened, the static water level was measured and recorded, and purging began. Water levels were not measured at operating wells ('B'Street and Rainbow Motel).

Operating wells were purged by opening the sampling tap and purging the tap and piping. The 'B' Street well sampling circuit was purged for 5 minutes at a rate of approximately 5 gallons per minute. The Rainbow Motel well does not have a sampling tap, and was purged 'full flow' for several minutes after the discharge piping was disconnected from the well head; at least one hundred gallons were purged in this manner. Parameters (temperature, pH, conductivity, and dissolved oxygen) were not monitored when purging either of the operating wells.

The PVC monitoring wells were purged using the dedicated bladder pumps, where fitted, or by hand bailing using a disposable bailer. Three well volumes of ground water were removed and/or parameters reached equilibrium before the sample was collected. Parameters were measured using a flow-through cell, so purge water from the 5 hand-bailed wells was not monitored.

Once the wells had been adequately purged, the parameter monitoring system was disconnected and set aside. The samples were collected by directing a gentle stream of ground water into 40-milliliter septum-topped glass vials containing the preservative hydrochloric acid (HCl). The vials were capped and checked for bubbles. If no evidence of headspace was seen, the sample vials were placed on ice in a cooler and subsequently chain-of-custodied and bused to Energy Laboratories in Billings for analysis.

3.2 May 2001 Annual Ground Water Sampling Event

The May 2001 annual ground water sampling event was conducted May 17 through 23. Twenty-nine wells were sampled, as indicated on Table 1.1. Only one of the scheduled wells was not sampled - Monitoring Well 8 had been damaged and is currently unavailable for sampling.

Thirty-four samples were analyzed as part of the May 2001 sample event: 29 primary samples, 3 field duplicates, and 2 trip blanks. Twenty-eight of the primary samples were analyzed for VOCs by EPA Method 624, and the municipal well sample was analyzed for VOCs by EPA Method 524.2. All samples were analyzed at Energy Laboratories, Inc. in Billings, Montana. A DEQ representative was present for part of this sampling event and collected two ground water samples; both were splits with Envirocon samples from wells 89-9 and 89-10.

3.3 November 2001 Semiannual Ground Water Sampling Event

The November 2001 semiannual sampling round was conducted November 26 through 29. Sixteen monitoring wells were sampled as part of this round. All of the scheduled wells were sampled, plus 4 wells added (for this event only) per prior agreement between BNSF and MDEQ.

In addition to the 16 primary samples, 2 field duplicates and 1 trip blank were also submitted for analysis. All of the samples were analyzed for VOCs by EPA Method 624 at Energy Laboratories in Billings, Montana. A DEQ representative was also present for part of the November sampling event and again collected two ground water samples; both were splits with Envirocon samples from wells MW 12 and L-87-5.

4.0 SAMPLE RESULTS AND DISCUSSION

This section presents the results of samples collected during the May and November 2001 sampling events. Analytical results for PCE, TCE, cis-DCE, and ‘other’ volatile organic compounds are presented on Tables 2.0 through 5.0, respectively. Results from the May 2001 sampling event are also presented on Figures 2.0, 4.0, and 6.0, which show the lateral distribution of dissolved PCE, TCE, and cis-DCE concentrations, respectively, during May. Results from the November 2001 sampling event are presented on Figures 3.0, 5.0, and 7.0, which show the lateral distribution of dissolved PCE, TCE, and cis-DCE concentrations during November.

4.1 Ground Water VOC Sample Results

May and November 2001 ground water samples contained dissolved chlorinated-VOC concentrations consistent with the long-term declines observed during the past 12 years of ground water monitoring. These concentration declines are due to VOC source removal during interim removal actions instituted on the LRY and to natural attenuation. Source control activities were described in the Final Draft Soil and Ground Water Feasibility Study Report, Envirocon, 1998. Additional VOC-source soils were removed from beneath the former vapor degreaser vat (Electric Shop) in 1999-2000.

Figures 2.0 and 3.0 show the distribution of dissolved PCE based on the May and November 2001 annual sampling events, respectively. PCE is present in a plume extending from the Electric Shop northeastward. Although PCE is detectable over a large area, ground water with PCE concentrations above 50 micrograms-per-liter (ug/l) appears to extend from the Electric Shop, downgradient approximately 3,500 feet. The maximum contaminant level (MCL) for PCE is 5 ug/l.

Figures 4.0 and 5.0 show the distribution of dissolved TCE based on the May and November 2001 annual sampling events, respectively. Three of the 29 wells sampled during May contained ground water with TCE concentrations above the 5 ug/l MCL. These 3 wells are all situated within the rail yard. During November, only 2 of these 3 wells contained ground water with TCE MCL exceedances; none of the other 13 wells sampled during November contained ground water with TCE concentrations above the MCL.

Figures 6.0 and 7.0 show the distribution of dissolved cis-DCE based on the May and November 2001 annual sampling events, respectively. Cis-DCE sample concentrations were all significantly below the 70 ug/l MCL during both of these sampling events.

Ground water samples from 2 monitoring wells contained detectable vinyl chloride during one or both of the 2001 ground water sampling events. Both wells are located within the rail yard limits. The vinyl chloride MCL is 2.0 ug/l. Ground water samples collected from Well L-87-2, located directly downgradient from the WWTP, have consistently contained vinyl chloride concentrations above the MCL. Ground water

samples collected in the last 3 years from Well L-88-10, located ¼ mile further downgradient, have not contained vinyl chloride concentrations above the MCL. It is suspected that this vinyl chloride is created by degradation of cis-1,2-DCE in the hydrocarbon smear zone beneath the WWTP area. Vinyl chloride and other contaminants detected during the May and November ground water sampling events are tabulated on Table 5.0.

No compounds other than PCE, TCE, and vinyl chloride exceeded their respective MCLs in ground water monitoring network samples collected during 1999, 2000, or 2001. Note that, for compounds of interest in ground water at this site, the MCL standards are currently equivalent to Montana State WQB-7 standards.

4.1.1 MDEQ Split Sample Results

MDEQ collected samples from monitoring wells 89-10 and 89-9 during the May sampling event. The MDEQ samples were analyzed for VOCs by EPA Method 524.2; in addition, the sample collected from 89-10 was also analyzed for extractable petroleum hydrocarbons (EPH) screen. BNSF's samples were analyzed for VOCs only, by EPA Method 624. The analytical results were similar as shown on Table 5.1.

During the November sampling event, MDEQ collected samples from monitoring wells MW-12 and L-87-5. The MDEQ samples were analyzed for VOCs by EPA Method 8260B. BNSF's samples were analyzed for VOCs by EPA Method 624. Again, the analytical results were similar.

4.1.2 VOC Concentration Declines

Changes in groundwater sample analyte concentrations were evaluated statistically to ensure that long-term ground water remediation is occurring. Protection of public health is the primary remedial goal, so past ground water sampling reports included well statistical evaluations based on the wells proximity to private property. At the MDEQ's request, PCE analytical results for monitoring wells on, or near, the PCE plume centerline have been added to the statistical evaluation. "Statgraphics 5 Plus", a powerful statistical software

package provided by Manugistics, was used for this evaluation. Analyte concentrations collected to-date from selected wells were tabulated using the Microsoft Excel software program, and these tables were then imported into the Statgraphics program. Numerous options were evaluated using test-runs; the Box-Cox power transformation regression approach was selected as it gave the "best fit" for the data sets. The Box-Cox transformation is "an analysis that automatically identifies a transformation from a family of power transformations. The analysis determines the appropriate transformation parameter, Lambda 1, which minimizes the mean squared error ...[of] the fitted model." (excerpt from the Statgraphics 5 Plus manual)

The overall decline in dissolved chlorinated-VOC concentrations is illustrated by plotting VOC concentrations from specific wells between May 1989 and November 2001. Figures 8.0 and 9.0 show TCE and PCE concentration declines in Well L-88-10; Figures 10.0 through 20.0 show PCE concentration declines in Wells 89-4, L-88-13, 92-4, 89-6, 92-2, LS-11, 89-3, L-87-5, 89-9, L-87-3, and 90-3, respectively. Observed PCE concentrations in the 12 wells have declined between 8 and 91 percent since May 1989, with a single well PCE concentration declining less than 60%.

4.2 Natural Attenuation Parameter Results

Natural attenuation processes occurring at the site include a variety of physical, chemical and biological processes that act to reduce the mass, toxicity, mobility, volume, or concentration of petroleum in soil and ground water. From November 1996 to May 1999, selected wells have been sampled for the natural attenuation parameters dissolved oxygen (DO), nitrate (NO_3), ferrous iron (Fe^{+2}), and methane (CH_4). These parameters indicate the extent of natural biodegradation occurring in the aquifer beneath and around the diesel fuel plume. DO and NO_3 are electron acceptors used by petroleum-degrading bacteria, whereas Fe^{+2} and CH_4 are products of petroleum degradation (MPCA, 1996; Sturman and Meyers, 1997). Under aerobic conditions, biodegradation of hydrocarbons proceeds utilizing oxygen as the terminal electron acceptor. As oxygen is depleted, alternative electron acceptors utilized are, in order of importance, NO_3, manganese (Mn^{+4}), Fe^{+3}, SO_4, and ultimately carbon dioxide (CO_2). Utilization of Fe^{+3} yields soluble Fe^{+2} as a reaction product. Utilization of CO_2 yields CH_4 as a reaction product. The reactants and products of biodegradation that are most easily measured are DO, NO_3, Fe^{+2}, and CH_4;

therefore these were the compounds analyzed for during 1996 - 1999 sampling events. NAP analysis was discontinued based on Envirocon's April 28, 2000 letter to the MDEQ.

Past NAP results demonstrate that electron donor concentrations (DO and NO_3) generally drop as ground water moves below the petroleum free-product plume, remain depressed until ground water passes out from beneath the petroleum free-product plume, and then begin to rebound downgradient. In contrast, the NAP results demonstrate that degradation by-product concentrations (Fe^{+2}, CH_4) generally increase as ground water passes beneath the petroleum free-product plume, remain elevated until ground water passes beyond the petroleum free-product plume, and then drop again downgradient. In summary, past NAP analyses indicate that petroleum-degrading microbes are utilizing the electron acceptors oxygen, CO_2, NO_3, and Fe^{+3} to biodegrade hydrocarbons.

4.3 Free-Product Thickness Measurements

The petroleum free-product plume thickness was measured in monitoring and observation wells during, or soon after, each of the sampling events. Thickness measurements represent the "apparent" free-product thickness, as opposed to the actual thickness. The apparent thickness of petroleum free-product within wells is believed to be at a minimum 2 to 4 times greater than the actual free-product thickness in the surrounding aquifer. This phenomenon was discussed at length in Section 4.0 of the "Livingston Rail Yard Final Remedial Investigation Report", Envirocon, 1994. References consulted in preparing that section include:

- CONCAWE Report No. 3/79: "Protection of Ground Water from Oil Pollution", The Hague, Netherlands, 61 p. de Pastrovich, T.L., Baradat, Y., Barthel, R., Chiarelli, A., and Fussell, D.R.
- "Volume Estimation of Light Nonaqueous Phase Liquid in Porous Media", Ground Water, v. 28, no. 11, pp. 48-56. Farr, A.M., Houghtalen, R.J., and McWhorter, D.B.
- "Determination of a Realistic Estimate of the Actual Formation Product Thickness Using Monitoring Wells: A Field Bailout Test." Proceedings of the Nation Water Well Association of Ground Water Scientists and Engineers and the American Petroleum Institute Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection and Restoration, pp. 235-253. Gruszczenski, T.S.
- "Laboratory Investigation of the Relationships Between Apparent and Actual Product Thickness in Sands". Proceedings of the Conference of Petroleum Hydrocarbons and

Organic Chemicals in Ground Water: Prevention, Detection and Restoration, Houston Texas, National Water Well Association. Hampton, Duane R., and Miller, Paul D.G.

Table 6.0 shows the Spring and Fall petroleum free-product thickness measurements collected to-date. Since the measurements presented here, 2 wells (MW7 and RW-5) have been located that were previously buried or paved over. These wells will be monitored during future sampling events. Figure 21.0 depicts the locations of wells measured for product and calculated apparent product thickness values during both May and December 2001. Of the wells containing measurable free-product, 2/3 contain less than 1/10-foot total apparent product thickness. Assuming that apparent product thickness is at least 2 to 4 times the actual thickness, this indicates that the majority of the petroleum free-product plume contains less than 1 inch of free product.

4.4 Ground Water Static Water Level Measurements

The ground water static water levels (SWLs) were measured in monitoring and observation wells during, or soon after, each of the sampling events. These measurements, together with conversions to mean sea level elevations, are presented on Tables 7.0 and 8.0 for May and December, respectively. In converting SWLs for wells which contained free-product, a product density factor of 0.88 was applied to the product thickness.

The calculated elevations were then plotted and elevation contours inferred from the data, thereby creating potentiometric ground water surface maps. These maps are presented for the May and December measurements on Figures 22.0 and 23.0, respectively. The elevation contours indicate that ground water beneath the site generally flowed northeast until it approached the Yellowstone River. During May, ground water near the river appears to have turned northward, while during December, ground water near the river appears to have continued northeastward. East of the Yellowstone River, groundwater appears to flow northward during both May and December. Figure 24.0 depicts the approximate area of the Livingston Aquifer and underlying bedrock.

5.0 CONCLUSIONS

This report presents the results of the 12th complete year of ground water sampling at the LRY. The aquifer beneath the LRY contains a free- and residual-hydrocarbon plume and a dissolved chlorinated VOC plume. These two plumes had separate source areas and only partially overlap.

The concentrations of dissolved chlorinated VOCs have declined significantly since 1989. The 2001 ground water monitoring results are consistent with this trend. At many monitoring well locations, the dissolved chlorinated-VOC concentrations have declined as much as 90 percent since 1989.

We can reasonably expect VOC concentrations to continue to decline in wells downgradient of the Livingston Railyard, both west and east of the Yellowstone River. This assumption is based on the dynamic nature of the aquifer, demonstrated natural attenuation of contaminants, and favorable impacts from source removal activities.

The apparent thickness of the petroleum free-product plume has also declined since regularly-scheduled measurements began in 1989. This is, at least in part, due to biodegradation by indigenous microbes. Measurements of both reactants and products of biodegradation within ground water beneath the petroleum free-product plume reveal that biodegradation is occurring.

REFERENCES:

MPCA, 1996, Assessment of Natural Biodegradation at Petroleum Release Sites; Minnesota Pollution Control Agency Fact Sheet #3.21; May 1996.

Sturman and Meyers, 1997, Intrinsic Bioremediation as a Remedial Option at Petroleum Contaminated Sites; notes and appendices from presentation.

Envirocon, 1998, Final Draft Soil and Ground Water Feasibility Study Report, Livingston Rail Yard, Livingston, Montana. Prepared for the Burlington Northern and Santa Fe Railway Company; January 1998.

TABLES

Table 1.0

Ground Water Monitoring Schedule
Livingston Rail Yard
Livingston, Montana

Sample Location	Semiannual (Nov.)	Annual (May)	Water Level and Product Thickness Measurements (Semiannual)
LB-4			X
LS-6			X
LS-11		X	X
L-87-2	X	X	X
L-87-3		X	X
L-87-4			X
L-87-5	X	X	X
L-87-7			X
L-87-6	X	X	X
L-88-9			X
L-88-10	X	X	X
L-88-13		X	X
1		X	X
2		X	X
3		X	X
4		X	X
5		X	X
6		X	X
7			X
8		X	X
89-1			X
89-2		X	X
89-3	X	X	X
89-4	X	X	X
89-6		X	X
89-7			X
89-9	X	X	X
89-10		X	X
90-2B			X
90-3	X	X	X
92-1	X	X	X
92-2	X	X	X
92-3			X
92-4		X	X
94-1	X	X	X
94-2	X	X	X
95-1			X
B-Street		X	X
Rainbow		X	X
RW-1			X
RW-2			X
RW-3			X
RW-4			X
RW-5			X
RW-6			X
RW-7			X
RW-9			X
HRO-6			X
HRO-7			X
HRO-9			X
HRO-10			X
HRO-11			X
HRO-12			X
HRO-13			X
HRO-14			X
HRO-15			X
HRO-16			X
HRO-19			X
HRO-20			X
HRO-21			X
HRO-22			X
HRO-23			X
HRO-24			X
LPZ-100			X
LG-11			X
LG-12			X

Table 1.1
May and November 2001 Groundwater Samples Collected

Sample Number	Sample Location	Sample Date	Sampling Method	Analytical Method
140101-1741	L-87-4	5/17/01	dedicated bladder pump	624
140101-1742	L-87-7	5/17/01	dedicated bladder pump	624
140101-1743	L-88-13	5/17/01	dedicated bladder pump	624
140101-1744	L-87-8	5/17/01	dedicated bladder pump	624
140101-1745	L-88-10	5/17/01	dedicated bladder pump	624
140101-1746	L-88-10 duplicate	5/17/01	dedicated bladder pump	624
140101-1747	trip blank	5/17/01	W. Family distilled water	624
140101-1748	L-87-3	5/18/01	dedicated bladder pump	624
140101-1749	89-2	5/18/01	dedicated bladder pump	624
140101-1750	94-2	5/18/01	dedicated bladder pump	624
140101-1751	Rainbow Motel	5/18/01	well-head discharge pipe	624
140101-1752	LS-11	5/18/01	dedicated bladder pump	624
140101-1753	90-3	5/18/01	dedicated bladder pump	624
140101-1754	92-2	5/18/01	dedicated bladder pump	624
140101-1755	94-1	5/18/01	dedicated bladder pump	624
140101-1756	L-87-2	5/21/01	dedicated bladder pump	624
140101-1757	89-4	5/21/01	dedicated bladder pump	624
140101-1758	89-4 duplicate	5/21/01	dedicated bladder pump	624
140101-1759	92-4	5/21/01	dedicated bladder pump	624
140101-1760	1	5/21/01	dedicated bladder pump	624
140101-1761	2	5/21/01	dedicated bladder pump	624
140101-1762	4	5/22/01	dedicated bladder pump	624
140101-1763	3	5/22/01	disposable bailer	624
140101-1764	5	5/22/01	dedicated bladder pump	624
140101-1765	89-6	5/22/01	disposable bailer	624
140101-1766	trip blank	5/22/01	W. Family distilled water	624
140101-1767	89-10	5/22/01	disposable bailer	624
140101-1768	6	5/22/01	dedicated bladder pump	624
140101-1769	89-9	5/23/01	dedicated bladder pump	624
140101-1770	89-3	5/23/01	dedicated bladder pump	624
140101-1771	92-1	5/23/01	dedicated bladder pump	624
140101-1772	92-1 duplicate	5/23/01	dedicated bladder pump	624
140101-1773	B Street	5/23/01	tap - municipal well	524.2
140101-1774	L-87-5	5/23/01	disposable bailer	624
140101-1775	L-87-3	11/26/01	dedicated bladder pump	624
140101-1776	89-4	11/26/01	dedicated bladder pump	624
140101-1777	89-9	11/27/01	dedicated bladder pump	624
140101-1778	89-9 duplicate	11/27/01	dedicated bladder pump	624
140101-1779	89-3	11/27/01	dedicated bladder pump	624
140101-1780	90-3	11/27/01	dedicated bladder pump	624
140101-1781	92-1	11/28/01	dedicated bladder pump	624
140101-1782	L-87-2	11/28/01	dedicated bladder pump	624
140101-1783	L-88-10	11/28/01	dedicated bladder pump	624
140101-1784	L-87-8	11/28/01	dedicated bladder pump	624
140101-1785	92-2	11/28/01	dedicated bladder pump	624
140101-1786	94-2	11/28/01	dedicated bladder pump	624
140101-1787	trip blank	11/29/01	Albertson's distilled water	624
140101-1788	MW-12 (O'Connors)	11/29/01	disposable bailer	624
140101-1789	L-87-5	11/29/01	disposable bailer	624
140101-1790	94-1	11/29/01	dedicated bladder pump	624
140101-1791	94-1 duplicate	11/29/01	dedicated bladder pump	624
140101-1792	89-1	11/29/01	disposable bailer	624
140101-1793	Rainbow Motel	11/29/01	well-head discharge pipe	624

Notes:
601 - EPA Method 601– VOCs
524.2 – EPA Method 524.2 - VOCs

Table 2.0
PCE Concentrations in parts-per-billion

Well	May-89	Jun-89	Jul-89	Aug-89	Sep-89	Oct-89	Nov-89	Dec-89	Jan-90	Feb-90	Mar-90	Apr-90	May-90	Jun-90	Jul-90	Aug-90	Sep-90	Oct-90	Nov-90	Dec-90	Jan-91	Feb-91	Mar-91	Apr-91	May-91	Jun-91	Jul-91	Aug-91	Sep-91	Oct-91	Nov-91	Dec-91
1			0.66	0.62			0.65						<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			1.4	
2			0.7	1.3			0.55			0.51			0.66			0.52			0.62			0.5			<0.5			<0.5			<0.5	
3	0.69			0.74			0.5						<0.5															<0.5			<0.5	
4				<0.5						<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5	
5	<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5	
6	7.1	11	7.2	4.9	3.9	4.2	3.6	2.2	2.7	1.4	1.5	1.9	2.6			4.6			4.3			1.3			4			4.2			3.2	
7	33	7.9	0.77	0.5	<0.5	<0.5	0.5	1.7	3.8	7.9	8.6	23	8	2.5		<0.5			<0.5			6.3			29			<0.5			<0.5	
8	180	188	151	126	112	96	123						148						93			130			110			64			46	
11			<0.5	<0.5			<0.5						<0.5			<0.5									<0.5			<0.5			<0.5	
89-1										10			18			2.4			2			7.3			17			2.2			1.8	
89-2										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
89-3										272			270			430	455		310			240			310			410			280	
89-4										530			530	370	192	158	127	200	260			340			330			180			210	
89-6										28			28						32			33			38			29			18	
89-7										32			28						19			17			18			25			18	
89-8										<0.5			<0.5				<0.5											<0.5				
89-9											263		302	400		330			280			230			250			220			190	
89-10													163									160						89				
89-11											<0.5		<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5	
90-1A											407																					
90-1B											385		480																			
90-1C											327																					
90-2A											251																	97				
90-2B											179																					
90-3													76	85		15			18			22			60			14			11	
90-4											<0.5		<0.5															<0.5				
90-5											<0.5		<0.5															<0.5				
90-6																			5.9						2.9							
92-1																																
92-2																																
92-3																																
92-4																																
94-1																																
94-2																																
B Street					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5				
Burns							<0.5																									
Clerence St				<0.5			<0.5																									
O-Street				<0.5								<0.5	<0.5	<0.5		<0.5												<0.5				
Depuy							7.2																									
Geyser TC										<0.5			<0.5			<0.5			<0.5													
HRO-10																																
HRO-12																												71				
HRO-13																												89				
HRO-17																												110				
HRO-19																												<0.5				
L Street	<0.5			<0.5			<0.5			<0.5			<0.5																			
L-87-1	<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5	
L-87-2							1.7	2.3	3.3	4.9	4.1		1.7	2	1.3		2.7	1.7	2.4			1.9			<0.5				0.5	0.53	0.83	
L-87-3	262	183	188	195	206	197	200	181	204	227	215	280	228			100			160			180			170			94			130	
L-87-4	<0.5	<0.5		<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5	
L-87-5	335	350	349	367	361	355	358	270		238	259	310			400							190						260	300		160	
L-87-7			<0.5	<0.5	0.87	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5		<0.5	<0.5			<0.5			<0.5			<0.5			<0.5	<0.5	<0.5	<0.5	
L-87-8	58	32	68	96	104	118	86	73	81	69	95	57	16			48			57			45			12			41	28	4.4	<0.5	
L-88-9	<0.5			<0.5			<0.5			<0.5			<0.5															<0.5				
L-88-10	160		137	155	147	148	165	151	209	177	176		168	112	114	127			110			170			86			89			65	
L-88-11	<0.5			<0.5			<0.5			<0.5			<0.5															<0.5				
L-88-12	255			197			250			171			150						320			160			140			290	120		130	
L-88-13	52	62	69	80	80	86	66	64	55	60	43	41	54			77			68			66			41			64			22	
LB-6																				0.79												
LG-10																																
LS-6	<0.5			<0.5			<0.5						<0.5	<0.5		<0.5			<0.5			<0.5			<0.5			<0.5			<0.5	
LS--7	<0.5			<0.5			<0.5			<0.5			<0.5															<0.5				
LS-8	146	181	136	98	86	96	61	105	128	124	109	130	100	112	110	50			74			120			110			59			40	
LS-10													<0.5			<0.5												<0.5				
LS-11	115	164		23	17	11	12	63	73	88	100	61	86	99		20			13			61			64			45			8	
POTW	73			46			23			68			99			40			23			66			77			38			21	
O Street	0.66			0.95			0.71			0.5			0.76																			
Rainbow	35						64			35			24			96									19			72				
VE-50																																
Werner St				<0.5			<0.5																									
O'Conr MW12																			8.5													

Note that, for PCE, the Federal MCL standard = tha Montana WOB7 standard = 5 parts-per-billion.

Note 'J' indicates an estimated value, present but less than the limit of quantitation

Table 2.0
PCE Concentrations in parts-per-billion

Well	Jan-92	Feb-92	Mar-92	Apr-92	May-92	Aug-92	Nov-92	Feb-93	May-93	Aug-93	Nov-93	Feb-94	May-94	Aug-94	Nov-94	Feb-95	May-95	Aug-95	Nov-95	May-96	Nov-96	May-97	Nov-97	May-98	Dec-98	May-99	Nov-99	May-00	Nov-00	May-01	Nov-01
1		0.86			1.1		1.0		0.66		1.4		0.68		<0.5		<0.5		<0.5J			<0.5		<0.5		<0.5		<0.5		<0.5	
2		1.1			0.77		0.7		0.74		0.81		20		0.73		0.6			<0.5J		<0.5J		<0.5J		<0.5J		<0.5		<0.5	
3		0.72							0.69				0.68				<0.5			<0.5J		<0.5				<0.5J		<0.5		<0.5	
4		1.0			<0.5				<0.5				0.68				<0.5			<0.5J		<0.5		<0.5		<0.5		<0.5		<0.5	
5		0.52			<0.5	<0.5	<0.5		0.5	1.1	<0.5	0.63	0.64	0.88	0.63	0.52	<0.5	0.59	0.63	<0.5J		<0.5		<0.5J		<0.5J		<0.5		<0.5	
6		1.5			5.2		2.0		3.5		1.8		1.1		1.4		1.2		1.2	1.4		<0.5		0.74		<0.5J		<0.5		<0.5	
7		4.0			0.9				8.9				13				9.6		well paved over by City												
8		79			30				70				50				59														
11					<0.5																										
89-1		9.6			6.9				13				6.9				8.8														0.35J
89-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
89-3		180	255		260	170	190	170	220	300	180	210	119	245	171	203	241	186	199	205	172	163	204	134	111	130	136	123	154	135	185
89-4		240			210	160	200	180	150	120	140	150	138	42	121	139	<0.5	103	84	137		87	99	59	86	80	88	87	82	86	77
89-6		21			32				21				1.0				16			16		12		15		14		9.8		8.3	
89-7		20			18				14				10				10														
89-8																															
89-9		200			180	170	130	120	41		90	96	80	87	80	85	71	59	62		59	69	58		48	41	46	52	44	45	44
89-10		116							73								61			55		35		48		36		32		38	
89-11		<0.5			<0.5																										
90-1A																															
90-1B																															
90-1C																															
90-2A																															
90-2B									16				62				60														
90-3		12			50				44				33				37			29	12	11	8.4	20	18	17	11	17		18	13
90-4																															
90-5																															
90-6						0.54	0.72	<0.5	0.5	<0.5	1.1	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	0.76	0.73												
92-1		850			520	220	160	200	470	210	200	86	87	115	69	80	88	124	109	55		85	217	168	60		152	73	117	75	94
92-2						41	37	31	0.81	7.5	29	32	15	33	29	37	18	24	27	9.7	21		13	8.1	2.4	6.6	15	12	14	5.0	12
92-3						1.2	<0.5	0.54	0.51	1.5	<0.5	<0.5	<0.5	0.82	0.68	0.61	<0.5	0.75	<0.5J												
92-4						2.2	4.1	31	33	2.0	2.5	38	35	1.8	3.5	32	34	2.1	4.4	28		2.4		33		21				35	
94-1														2.2	1.8	2.5	2.5	1.5	2.4	1.8	3.6		1.9	1.6	1.8	1.6	1.4	1.5	1.3	1.2	1.5
94-2														<0.5	0.65	0.57	<0.5	<0.5J	<0.5J	<0.5J	<0.5J		<0.5J	<0.5J	<1.0	<0.5	<0.5J	<0.5J	<0.5J	0.25J	0.22J
B Street			<0.5	<0.5	<0.5				<0.5								<0.5*			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
Burns																															
Clarence St																															
D-Street																															
Depuy																															
Geyser TC																															
HRO-10																	<0.5														
HRO-12																															
HRO-13																															
HRO-17					62																										
HRO-19																															
L Street																															
L-87-1		<0.5			<0.5																										
L-87-2		2.2				<0.5	10	1.2	0.78	<0.5		<0.5	<0.5	1.8	0.66	<0.5	<0.5	1.3	1.8	<0.5	<0.5	<0.5	<0.5	<0.5J	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
L-87-3		140			140	80	110	140	88	81	86	100	96	74	92	92	88	69	89	76		44		49		46		54		52	52
L-87-4		<0.5			<0.5				<0.5				<0.5				<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
L-87-5		150				160	72	94	70	93	80	75	58	92	77	82	57	61	51	64		69			47					34	35
L-87-7		<0.5			<0.5				<0.5				<0.5				<0.5					<0.5		<0.5		<0.5		<0.5		<0.5	
L-87-8		16			11	6.2	5.8	6.7	3.5	3.4	5.0	5.2	14	12	8.4	9.1	3.7	2.8	3.9	2.4	2.4	2.5	1.7	3.4	<1.0	1.7	1.7			2.4	1.8
L-88-9									<0.5								<0.5														
L-88-10		115				71	81	84	47	39	47	73	45	<0.5	44	56	44	29	40	30	29	19	28	27	23	29	29	24	24	22	28
L-88-11																															
L-88-12		120			127																										
L-88-13		19			26				21								19			16		15		14		13		11		9.0	
LB-6																															
LG-10																															
LS-6		1.4			<0.5												<0.5														
LS--7																															
LS-8		74			73	66																									
LS-10		<0.5																													
LS-11		38			75	14	11	35	54	28	4.4	41	39	16			37	14	20	34		25		17		17		14		20	
PQTW		33			61																										
Q Street																															
Rainbow					20				11				10				11							7.6						4.7	15
VE-50																	<0.5														
Werner St																															
O'Conr MW12																															2.5

Note 'J' indicates an estimated value, present but less than the limit of quantitation

* - <0.5 is June resample of B St. well, original May 95' result was 5.4 ppb validated as "unusable"

Table 3.0
TCE Ground Water Concentrations in perts-per-billion

Well	May-89	Jun-89	Jul-89	Aug-89	Sep-89	Oct-89	Nov-89	Dec-89	Jan-90	Feb-90	Mar-90	Apr-90	May-90	Jun-90	Jul-90	Aug-90	Sep-90	Oct-90	Nov-90	Dec-90	Jan-91	Feb-91	Mar-91	Apr-91	May-91	Jun-91	Jul-91	Aug-91	Sep-91	Oct-91	Nov-91	Dec-91	Jan-92
1			<0.5	<0.5			<0.5						<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
2			<0.5	<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
3													<0.5															<0.5			<0.5		
4							<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
5							<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
6							<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
7							<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
8	9.9	10	8.5	10	5.5	5.1	5.9						9.1						4.1			6.0			8.1			4.5			1.5		
11			<0.5	<0.5			<0.5						<0.5			<0.5									<0.5			<0.5			<0.5		
89-1										0.5			2.2			<0.5			<0.5			<0.5			0.6			<0.5			<0.5		
89-2										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
89-3										0.56			0.55			0.73	0.74		0.67			0.91			0.53			1.6			<0.5		
89-4										3.9			4.5	3.5	4.5	3.6	4.2	3.3	4.1			3.5			3.2			4.3			6.0		
89-6										0.86			1.0						0.83			0.87			0.80			1.0			0.80		
89-7										2.5			2.8						1.8			2.3			2.6			1.4			1.8		
89-8										<0.5			<0.5				<0.5											<0.5					
89-9											4.0		8.3	9.0		7.9			6.2			6.5			8.2			13			6.9		
89-10													16									11						8.1					
89-11											<0.5		<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
90-1A											14																						
90-1B											14		14																				
90-1C											20																						
90-2A											20																	12					
90-2B											22																						
90-3													8.8	9.6		12			6.3			4.5			7.3			9.6			4.1		
90-4											<0.5		<0.5															<0.5					
90-5											<0.5		<0.5															<0.5					
90-6																			<0.5						<0.5								
92-1																																	
92-2																																	
92-3																																	
92-4																																	
94-1																																	
94-2																																	
B Street					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5					
Burns							<0.5																										
Clarence S				<0.5			<0.5																										
D-Street				<0.5								<0.5	<0.5	<0.5		<0.5												<0.5					
Depuy							1.3																										
Geyser TC										<0.5			<0.5			<0.5			<0.5														
HRO-10																																	
HRO-12																												7.5					
HRO_13																												18					
HRO-17																												26					
HRO-19																												28					
L Street	<0.5			<0.5			<0.5			<0.5			<0.5																				
L-87-1	<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
L-87-2							26	39	56	25	73		26	17	12		18	18	26			7.0			26				6.8	18	17		
L-87-3	26	22	18	17	18	18	17	18	18	23	17	26	18			18			12			18			18			17			10		
L-87-4	<0.5	<0.5		<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<0.5			<1.0			<0.5			<0.5		
L-87-5	5.5	17	18	18	17	73	17	6.8		5.1	5.5	17			17							5.2						12	12		6.0		
L-87-7				<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5		<0.5	<0.5			<0.5			<0.5			<0.5			<0.5	<0.5	<0.5	<0.5		
L-87-8	7.8	4.5	7.3	17	19	10	6.6	17	12	18	19	17	4.2			17			38			30			6.0			12	18	7.2	5.5		
L-88-9	<0.5			<0.5			<0.5			<0.5			<0.5															<0.5					
L-88-10	31		26	30	30	32	25	26	26	25	25		25	26	26	18			18			25			18			21			18		
L-88-11	<0.5			<0.5			<0.5			<0.5			<0.5															<0.5					
L-88-12	4.5			4.5			4.1			4.5			2.7						3.5			7.8			6.0			2.8	2.9		5.6		
L-88-13	7.6	5.5	17	17	17	17	17	10	17	4.5	6.8	7.6	7.2			18			18			17			6.3			17			7.7		
LB-6																				<0.5													
LG-10									<0.5	<0.5	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
LS-6	<0.5			<0.5			<0.5						<0.5	<0.5		<0.5			<0.5			<0.5			<0.5			<0.5			<0.5		
LS--7	<0.5			<0.5			<0.5			<0.5			<0.5															<0.5					
LS-8	23	18	17	7.8	5.5	5.5	6.8	18	26	18	19	25	19	17	17	7.1			5.5			16			17			7.4			3.1		
LS-10													<0.5			<0.5												<0.5					
LS-11	17	18		30	26	19	26	17	17	17	17	19	19	17		25			26			17			17			17			6.8		
POTW	5.5			2.1			0.69			4.5			8.8			1.6			0.84			3.5			7.6			2.2			<0.5		
Q Street	<0.5			<0.5			<0.5			<0.5			<0.5																				
Rainbow	5.2						17			5.6			4.7			18									3.1			18					
VE-50																																	
Werner St				<0.5			<0.5																										
O'Conr MW12																			<0.5														

Note that, for TCE, the Federal MCL standard = the Montana WQB7 standard = 5 parts-per-billion.

Note: 'J' indicates an estimated value, present but less than the limit of quantitation

Table 3.0
TCE Ground Water Concentrations in perts-per-billion

Well	Feb-92	Mar-92	Apr-92	May-92	Aug-92	Nov-92	Feb-93	May-93	Aug-93	Nov-93	Feb-94	May-94	Aug-94	Nov-94	Feb-95	May-95	Aug-95	Nov-95	May-96	Nov-96	May-97	Nov-97	May-98	Dec-98	May-99	Nov-99	May-00	Nov-00	May-01	Nov-01
1	<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5			<0.5		<0.5		<0.5		<0.5		<0.5	
2	<0.5			<0.5		<0.5		<0.5		<0.5		0.73		<0.5		<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
3	<0.5							<0.5				<0.5				<0.5			<0.5		<0.5				<0.5		<0.5		<0.5	
4	<0.5			<0.5				<0.5				<0.5				<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
5	<0.5			<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
6	<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
7	<0.5			<0.5				0.5				0.5				<0.5														
8	3.5			1.4				5.0				2.8				3.2														
11				<0.5																										
89-1	<0.5			<0.5				0.74				<0.5				<0.5													<0.5	<0.5
89-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
89-3	0.58	0.59		0.80	0.90	<0.5	0.55	0.78	1.3	0.83	0.63	0.91	1.6	1.1	1.2	1.8	0.73	0.59	1.4	0.82	0.97	2.2	0.70	1.4	1.5	1.2	1.4	1.3	1.8	2.8
89-4	5.9			4.1	3.2	2.9	2.2	2.0	2.5	1.8	2.0	1.6	2.6	1.8	1.8	1.6	1.6	1.5	1.2		1.1	1.7	1.4	1.6	1.2	1.8	1.4	1.5	1.2	1.5
89-6	0.67			1.1				0.68				<0.5				<0.5			<0.5J		<0.5J		<0.5J		<0.5J		<0.5		<0.5	
89-7	1.9			3.4				4.5				<0.5				3.4														
89-8																														
89-9	6.1			8.3	9.1	6.3	3.0	7.6		4.1	3.5	2.5	4.1	3.7	2.9	3.4	2.9	2.7		2.4	5.6	4.1		3.0	2.2	2.6	2.4	2.6	1.2	2.3
89-10	7.8							6.6				5.7				5.1			5.5		4.3		4.9		3.6		3.5		3.1	
89-11	<0.5			<0.5																										
90-1A																														
90-1B																														
90-1C																														
90-2A																														
90-2B								4.9				9.0				9.6														
90-3	3.0			3.5				4.2				3.0				3.0			2.6	2.1	1.2	2.0	2.0	1.9	1.5	2.0	1.2		0.96	0.82
90-4																														
90-5																														
90-6				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5												
92-1	0.76			0.80	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5J	<0.5J	<0.5J		<0.5J		1.1	<1.0		<0.5J	<0.5	<0.5	<0.5	<0.5
92-2				1.0	8.4	3.8	2.3	<0.5	<0.5	2.5	3.3	2.0	3.8	2.4	2.4	2.1	3.0	3.7	0.67	2.0		1.2	0.57	<1.0	<0.5J	1.3	1.1	0.97	0.38J	0.86
92-3					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.8	<0.5	<0.5	<0.5	<0.5	<0.5												
92-4					<0.5	1.1	2.1	2.9	<0.5	0.5	2.0	1.8	<0.5	1.0	2.3	1.8	<0.5	1.0	1.4		<0.5J		1.3		1.1				1.2	
94-1													<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
94-2														<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B Street		<0.5	<0.5	<0.5				<0.5								<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
Burns																														
Clarence St																														
D-Street																														
Depuy																														
Geyser TC																														
HRO-10																9.9														
HRO-12																														
HRO_13																														
HRO-17				5.3	16																									
HRO-19																														
L Street																														
L-87-1	<0.5			<0.5																										
L-87-2	12				7.6	11	18	19	6.2		13	16	8.6	8.3	15	13	2.9	3.7	14	1.9	3.2	4.5	11	1.5	6.2	1.1	7.8	1.1	11	1.1
L-87-3	12			14	9.7	11	12	11	9.8	10	11	8.7	6.5	7.5	8.5	8.6	6.1	8.8	8.3		7.5		6.8		5.3		5.6		4.8	4.7
L-87-4	<0.5			<0.5				<0.5				<0.5				<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
L-87-5	5.8				9.0	4.3	3.2	6.2	6.1	4.8	3.4	2.5	4.9	3.4	2.5	3.2	3.5	3.0	3.4		5.0			3.0					1.1	2.2
L-87-7	<0.5			<0.5				<0.5								<0.5					<0.5		<0.5		<0.5		<0.5		<0.5	
L-87-8	7.0			2.6	0.93	0.94	4.4	1.5	1.0	1.9	7.7	5.5	5.6	4.6	19	1.6	1.1	1.9	2.2	1.6	0.74	1.1	3.8	4.1	6.1	3.3			5.5	5.6
L-88-9								<0.5								<0.5														
L-88-10	16				14	20	15	15	14	15	12	11	<0.5	12	11	12	12	15	11	16	8.7	11	9.1	9.5	8.4	8.7	7.3	7.8	7.2	7.9
L-88-11																														
L-88-12	2.7			3.4																										
L-88-13	5.0			4.9				3.3				2.9				3.4			2.5		2.4		2.3		1.9		1.3		1.4	
LB-6																														
LG-10	<0.5	<0.5	<0.5	<0.5																										
LS-6	<0.5			<0.5				<0.5								<0.5														
LS-7																														
LS-8	13			10	4.7																									
LS-10	<0.5																													
LS-11	8.8			11	14	12	9.0	9.0	8.5	8.8	9.4	7.0	11	7.7	7.9	6.3	6.4	6.8	6.8		5.6		6.8		7.2		5.9		4.3	
POTW	2.3			5.0																										
O Street																														
Rainbow				3.9				1.9				1.8				1.8													0.87	3.8
VE-50																16														
Werner St																														
O Conr MW12																														<0.5

Note 'J' indicates an estimated value, present but less than the limit of quantitation

Table 4.0
Cis-1,2-DCE Ground Wqater Concentrations in perts-per-billion

Well	May-89	Jun-89	Jul-89	Aug-89	Sep-89	Oct-89	Nov-89	Dec-89	Jan-90	Feb-90	Mar-90	Apr-90	May-90	Jun-90	Jul-90	Aug-90	Sep-90	Oct-90	Nov-90	Dec-90	Jan-91	Feb-91	Mar-91	Apr-91	May-91	Jun-91	Jul-91	Aug-91	Sep-91	Oct-91	Nov-91	Dec-91	Jan-92
1			<1.0	<1.0			<1.0						<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
2			<1.0	<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
3	<1.0			<1.0			<1.0						<1.0															<1.0			<1.0		
4				<1.0						<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
5	<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
7	2.9	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	1.1	<1.0		<1.0			<1.0			<1.0			3.8			<1.0			<1.0		
8	17	24	35	27	19	13	12						24						4.3			7.6			13			7.6			1.2		
11			<1.0	<1.0			<1.0						<1.0			<1.0									<1.0			<1.0			<1.0		
89-1										<1.0			2.2			<1.0			<1.0			<1.0			1.1			<1.0			<1.0		
89-2										<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
89-3										<1.0			<1.0			1.8	1.0		<1.0			<1.0			<1.0			<1.0			<1.0		
89-4										5.6			6.6	4.8	2.0	1.5	1.3	2.3	3.8			3.6			3.3			1.8			16		
89-6										1.0			<1.0						<1.0			<1.0			<1.0			3.1			<1.0		
89-7										1.0			<1.0						<1.0			<1.0			<1.0			<1.0			1.8		
89-8										<1.0			<1.0				<1.0											<1.0					
89-9											3.0		1.9	2.2		2.1			1.0			<1.0			1.6			1.6			1.3		
89-10													60									26						20					
89-11											<1.0		<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
90-1A											102																						
90-1B											85		17																				
90-1C											184																						
90-2A											119																	35					
90-2B											178																						
90-3													51	48		26			8.7			3.9			35			33			7.7		
90-4											<1.0		<1.0															<1.0					
90-5											<1.0	<1.0																<1.0					
90-6																			<1.0						<1.0								
92-1																																	
92-2																																	
92-3																																	
92-4																																	
94-1																																	
94-2																																	
B Street					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0					
Burns							<1.0																										
Clarence St				<1.0			<1.0																										
D-Street				<1.0								<1.0	<1.0	<1.0		<1.0												<1.0					
Depuy							<1.0																										
Geyser TC										<1.0			<1.0			<1.0			<1.0														
HRO-10																																	
HRO-12																												8.0					
HRO_13																												13					
HRO-17																												25					
HRO-19																												13					
L Street	<1.0			>1.0			<1.0			<1.0																							
L-87-1	<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
L-87-2							2571	1516	1317	1164	874		724	879	1114		1218	1314	1721			220			320				1114	670	410		
L-87-3	68	121	81	56	76	42	37	80	88	94	76	76	80			21			27			52			80			25			16		
L-87-4	<1.0	<1.0		<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
L-87-5	5.4	6.2	7.5	7.8	7.0	6.8	6.3	4.5		3.3	3.4	4.5			6.2							2.7						4.4	4.4		3.0		
L-87-7			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0			<1.0			<1.0			<1.0			<1.0	<1.0	<1.0	<1.0		
L-87-8	3.5	2.4	6.1	6.3	5.1	6.0	7.2	8.0	5.1	12	7.1	5.1	2.3			14			11			16			4.5			4.8	6.3	13	76		
L-88-9	<1.0			<1.0			<1.0			<1.0			<1.0															<1.0					
L-88-10	105		195	357	410	459	437	354	369	200	266		375	233	369	334			369			220			180			230			200		
L-88-11	<1.0			<1.0			<1.0			<1.0			<1.0															<1.0					
L-88-12	3.5			2.4			2.3			3.2			2.4						4.5			1.1			1.7			1.2	2.3		2.6		
L-88-13	6.8	8.1	17	24	27	21	19	13	13	9.9	7.6	5.7	9.7			34			23			8.8			5.0			40			38		
LB-6																				<1.0													
LG-10									<1.0	<1.0	<1.0	<1.0	<1.0			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	>1.0	<1.0	<1.0	<1.0	<1.0
LS-6	<1.0			<1.0			<1.0						<1.0	<1.0		<1.0			<1.0			<1.0			<1.0			<1.0			<1.0		
LS--7	<1.0			<1.0			<1.0			<1.0			<1.0															<1.0					
LS-8	83	69	45	21	17	13	13	47	110	128	87	110	127	87	56	15			12			110			110			20			6.7		
LS-10													<1.0			<1.0			<1.0									<1.0					
LS-11	58	60		122	140	110	89	63	89	80	96	72	88	76		108			77			90			57			102			67		
POTW	9.2			5.5			<1.0			10			36			3.2			<1.0			8			38			5			<1.0		
O Street	<1.0			<1.0			<1.0			<1.0			<1.0																				
Rainbow	8.9						64			27			16			99									7.9			74					
VE-50																																	
Werner St				<1.0			<1.0																										
O'Conr MW12																			<1.0														

Note that, tor cis-1,2-DCE, the Federal MCL standard = the Montana WOB7 standard = 70 parts-per-billion.

Note 'J' indicates an estimated value, present but less than the limit of quantitation

Table 4.0

Cis-1,2-DCE Ground Wqater Concentrations in perts-per-billion

Well	Feb-92	Mar-92	Apr-92	May-92	Aug-92	Nov-92	Feb-93	May-93	Aug-93	Nov-93	Feb-94	May-94	Aug-94	Nov-94	Feb-95	May-95	Aug-95	Nov-95	May-96	Nov-96	May-97	Nov-97	May-98	Dec-98	May-99	Nov-99	May-00	Nov-00	May-01	Nov-01
1	<1.0			<1.0		<1.0		<1.0		<1.0		<0.5		<0.5		<0.5		<0.5			<0.5		<0.5		<0.5		<0.5		<0.5	
2	<1.0			<1.0		<1.0		<1.0		<1.0		<0.5		<0.5		<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
3	<1.0							<1.0				<0.5				<0.5			<0.5		<0.5				<0.5		<0.5		<0.5	
4	<1.0			<1.0				<1.0				<0.5				<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
5	<1.0			<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
6	<1.0			<1.0		<1.0		<1.0		<1.0		<0.5		<0.5		<0.5		<0.5	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
7	<1.0			<1.0				1.0				0.53				<0.5														
8	<1.0			3.7				7.9				3.3				3.0														
11				<1.0																										
89-1	<1.0			<1.0				1.6				<0.5				<0.5														<0.5
89-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
89-3	<1.0	<1.0		1	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.54	<0.5	<0.5	<0.5	<0.5	<1.0	0.62	<0.5	1.0	0.76	0.61	0.59
89-4	13			4.8	4.6	2.6	1.6	1.2	1.2	<1.0	<1.0	0.72	0.73	0.53	<0.5	0.7	1.7	3.1	2.9		2.5	6.2	4.0	3.3	1.4	9.1	5.0	2.8	1.2	2.2
89-6	<1.0			<1.0				<1.0				<0.5				<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
89-7	<1.0			<1.0				<1.0				<0.5				<0.5														
89-8																														
89-9	<1.0			1.2	3.3		<1.0	1.8		2.4	1.0	0.82	1.1	0.99	0.5	1.0	1.0	1.1		0.84	3.2	4.3		1.8	1.2	1.1	0.93	1.6	0.45J	1.3
89-10	20							21								11			8.3		4.2		5.4		3.4		3.3		2.9	
89-11	<1.0			<1.0																										
90-1A																														
90-1B																														
90-1C																														
90-2A																														
90-2B								13				43				23														
90-3	3.8			25				11				5.6				5.1			2.8	1.7	<0.5J	2.6	1.0	1.0	0.53	1.7	0.32J		0.22J	<0.5
90-4																														
90-5																														
90-6				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5													
92-1	4.5			7.7	12	<1.0	<1.0	3.1	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	1.1	8.6	12	21		8.6	4.6	12	4.6		12	17	1.3	1.6	1.0
92-2				5.6	18	7.0	4.2	<1.0	10	4.2	3.6	4.2	6.4	2.6	3.0	3.6	6.0	4.1	0.74	1.6		0.92	<0.5J	<1.0	<0.5J	0.68	0.60	0.54	<0.5	0.41J
92-3					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5													
92-4					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5J	0.81		<0.5		1.4		<0.5J				0.36J	
94-1													<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
94-2														<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B Street		<1.0	<1.0	<1.0				<1.0								<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
Burns																														
Clarence St																														
D-Street																														
Depuy																														
Geyser TC																														
HRO-10																23														
HRO-12																														
HRO_13																														
HRO-17				8.4	9.5																									
HRO-19																														
L Street																														
L-87-1	<1.0			<1.0																										
L-87-2	380				310	430	190	100	270		140	46	96	138	75	34	52	88	23	54	21	41	19	33	17	28	15	24	11	18
L-87-3	57			52	17	15	34	30	18	14	21	24	8.3	8.9	16	17	9.5	11	14		12		7.9		6.9		6.0		5.2	2.6
L-87-4	<1.0			<1.0				<1.0				<0.5				<0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
L-87-5	1.9				4.1	2.2	1.2	2.2	3.7	3.1	1.4	0.78	1.2	1.1	<0.5	1.0	1.0	1.2	0.91		3.3			1.9					0.50	1.2
L-87-7	<1.0			<1.0				<1.0				<0.5				<0.5					<0.5		<0.5		<0.5		<0.5		<0.5	
L-87-8	12			2.0	1.0	<1.0	3.1	<1.0	<1.0	2.0	4.0	1.5	1.6	1.2	3.2	<0.5	0.66	1.4	0.55	<0.5J	<0.5J	<0.5J	<2.5J	<1.0	1.6	5.8			2.8	2.6
L-88-9								<1.0								<0.5														
L-88-10	184				100	130	90	57	64	95	70	44	43	52	36	37	22	39	16	24	12	22	13	18	13	18	9.1	14	8.1	13
L-88-11																														
L-88-12	1.3			1.2																										
L-88-13	14			4.9			90	2.3				1.6				1.5			0.68		1.0		1.1		0.79		0.63		0.37J	
LB-6																														
LG-10	<1.0	<1.0	<1.0	<1.0																										
LS-6	<1.0			<1.0				<1.0				<0.5				<0.5														
LS–7																														
LS-8	78			54	12																									
LS-10	<1.0																													
LS-11	73			50	54	43	29	25	16	13	30	18	22	17	15	12	19	9.0	10		5.9		6.7		7.6		5.5		3.6	
POTW	4.6			16																										
O Street																														
Rainbow				11				3.0				2.2				2.3													0.50J	3.6
VE-50																47														
Werner St																														
O'Conr MW12																														<0.5

Note 'J' indicates an estimated value, present but less than the limit of quantitation

Table 5.0

Other Compounds Detected

ug/l (ppb)

Location	Date	Vinyl Chloride	Chlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	trans-Dichloroethene	2-Chlorotoluene
	MCL =	**2**	**100**	**600**	**400**	**75**	**100**	**not regulated**
	WQB7=	**2**	**100**	**600**	**400**	**75**	**100**	**not regulated**
L-87-2	Nov-99	**21**	33	1.9	0.59	4.1	1.2	51
	May-00	**11**	19	1.5	0.44J	3.0	1.0	40
	Nov-00	**17**	33	1.9	0.55	4.2	1.1	48
	May-01	**6.2**	14	1.3	0.40J	2.6	0.91	34
	Nov-01	**16**	29	1.7	0.55	3.8	0.91	49
L-87-3	May-01						0.38J	
	Nov-01						0.41J	
L-87-7	May-00							0.52
	May-01							0.17J
L-88-10	Nov-99	**1.1**	2.8	0.64	0.29J	1.1	0.31J	1.0
	May-00	**0.46J**	1.4	0.43J		0.59	0.24J	
	Nov-00	**0.67**	3.0	0.56		0.66	0.30J	0.26J
	May-01		0.75	0.32J		0.53	0.21J	0.10J
	Nov-01	**1.0**	6.1	0.59	0.23J	1.2	0.35J	1.5
89-10							0.20J	
LS-11	May-00		2.4		0.39J	3.0		
Rainbow Motel	Nov-01		0.39J					

Note: In May 2001, MW2 and B-Street well groundwater contained traces of 4 common chlorination by-products: bromodichloromethane, bromoform, chlorodibromomethane, and chloroform.

Table 6.0

May 1989 Through December 2001
Apparent Free-Product Thickness Measurements
2001 Annual Ground Water Report

[feet]

Well	May-89	Nov-89	May-90	Nov-90	May-91	Nov-91	May-92	Nov-92	May-93	Nov-93	May-94	Nov-94	May-95	Aug-95	Nov-95	May-96	Nov-96	May-97	Nov-97	May-98	May-99	Jun-99	Sep-99	Nov-99	Jun-00	Nov-00	May-01	Dec-01
1								ND	ND																		ND	ND
2								ND	ND																		ND	ND
3								ND	ND																		ND	ND
LS-6																											<0.01	ND
LS-7	0.33	0.24	0.17	0.30	0.28	0.51		0.40	0.12	0.45		(well abandoned 12/94)			(replaced by 95-1)													
LS-12	0.86	0.96	0.69	0.74	0.69			(full of rocks & trash)																				
LB-4	1.10	0.95	0.85	0.86	0.90	0.84		0.77	0.54			0.81	0.45	0.65				0.66	0.42	0.28	0.39	0.40	0.47		0.09		0.57	0.23
LPW-1	0.94																	lid welded on top of steel casing										
L-87-2	0.27	1.74	0.48	0.76	0.12	0.13		0.01	ND	0.01		ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	0.01	ND	ND		0.02	ND
L-87-4	0.22	0.31	0.04						ND		ND		ND	0.19	0.10		0.39	0.98	0.68	0.11		0.03	0.02		ND		<0.01	ND
L-87-5								ND	ND																		ND	ND
L-87-6																						0.01	ND				<0.01	ND
L-87-7	0.93	1.26	0.70	1.10	0.87	0.68	0.62	1.00	0.63	0.70	0.58	0.68	0.24	0.65	0.70	0.24	0.46	0.90	0.48	0.33		0.55	0.67	ND	0.22		0.39	0.42
L-87-8	0.20	0.38	0.31	0.35	0.46	0.62	0.35	0.42	0.33		0.10	0.15	0.12	0.31	0.27	0.11	0 40	0.24	0.23			0.01	0.07			0.40	1.21	0.76
L-88-9																											<0.01	ND
90-1C						0.02																						0.03
92-3		(screened too deep)																									ND	ND
L-88-13	(screened below the average product level)								ND													<0.01	ND	ND	ND		ND	ND
HRO-4																			0.41									
HRO-5																												0.04
HRO-6					0.08			0.62		0.80	0.48	0.56	0.36	0.52		0.65	0.74	0.43	0.70	0.37	0.34	0.04	0.14		0.04			0.42
HRO-7																		0.58	0.61	0.27	0.20	<0.01	0.23		0.01		0.65	0.55
HRO-8										0.02		0.21		ND					dry									0.46
HRO-9										0.10						0.03		0.04	0.05	0.03	0.03	0.02	0.01		ND		0.11	0.04
HRO-10												ND		<0.01		ND			<0.01									ND
HRO-11												0.11	0.23	ND						(inadvertently covered during MRL work along rail lines)								
HRO-12												ND	ND	ND		ND				(inadvertently covered during MRL work along rail lines)								
HRO-13									ND			ND	ND	ND		ND												ND
HRO-14									ND			ND	<0.01			ND				(inadvertently covered during MRL work along rail lines)								
HRO-15									0.02			0.07	<0.01							(inadvertently covered during MRL work along rail lines)								
HRO-16									0.01			0.09	0.04							(inadvertently covered during MRL work along rail lines)								
HRO-17									0.41																			
HRO-19										0.24										(inadvertently covered during MRL work along rail lines)								
HRO-20							0.21				<0.01	<0.01	ND	0.06	0.16	0.03		ND	0.15									ND
HRO-21											<0.01	<0.01	ND	ND	<0.01	ND		<0.01										ND
HRO-22											<0.01	<0.01	<0.01	ND	0.01	ND		0.01	0.06								0.21	ND
HRO-23											<0.01	<0.01	ND	ND		ND		ND	ND								<0.01	ND
HRO-24											0.02	<0.01	0.01	0.14	0.24	ND		0.03	0.17								0.01	ND
RW-1								0.01	ND			<0.01	0.01			ND		ND			<0.01	0.01	ND				0.01	ND
RW-2								ND	ND			<0.01	<0.01			ND		ND			0.01	0.01	ND				<0.01	ND
RW-3								0.07	ND			0.01	<0.01					0.15			0.16	0.10	ND				0.07	0.10
RW-4								0.19	0.20			0.16	0.16			0.40		0.34			1.01	0.41	ND		0.75		0.51	0.48
RW-5												0.09	0.24							(inadvertently covered during MRL work along rail lines)								
RW-6								0.42				1.07	0.22			0.13		0.36			0.23	0.36	0.82		0.70		0.37	0.64
RW-7											0.22	0.02	0.01	0.19	0.25	ND	0.26	0.06	0.20	0.13	0.17	0.01	0.01				0.23	0.17
RW-8											ND	0.01	0.03	0.19	0.17			0.01			0.05	0.02	0.08				0.28	0.31
RW-9											<0.01	ND	ND	ND	0.01	ND	ND	ND	ND	ND	<0.01	0.01	0.01				0.01	ND
LG-11																ND									ND			ND
LG-12																ND											<0.01	ND
95-1																ND	ND	ND				0.01	ND		ND		0.75	ND
LPZ-100										0.22		0.09							0.17								0.08	(dry)

## - interpolated from adjacent month's measurements

ND - No product detected

<0.01 - Trace of product detected, but less than the resolution of the product probe's scale

Table 7.0

May 2001

Water Level and Product Thickness Measurements

Location	Date Measured	Product Depth [feet below TOC]	Water Depth [feet below TOC]	Product Thickness [feet]	Product Correction [feet]	TOC Elevation [feet]	Corrected SWL Elevation [ft]
LB-4	4/5/01	23 63	24.20	0.57	0.50	4494.88	4471.18
LS-6	7/1/01	trace	19.75	trace		4501.64	4481.89
LS-11	5/18/01	-	6.27	ND		4460.37	4454 10
L-87-2	5/17/01	-	26.24	ND		4491.74	4465.50
L-87-3	5/18/01	-	26.21	ND		4482.58	4456.37
L-87-4	5/17/01	-	24.01	ND		4494 38	4470.37
L-87-5	5/23/01	-	25.16	ND		4495.24	4470.08
L-87-7	5/17/01	-	24.34	ND		4492.83	4468.49
L-87-8	5/17/01	-	23.53	ND		4490.16	4466.63
L-88-9*	7/1/01	trace	20.93	trace		4501.02	4480.09
L-88-10	5/17/01	-	24 55	ND		4483 80	4459.25
L-88-13	5/17/01	-	25.55	ND		4488 59	4463.04
1	5/21/01	-	19.42	ND		4488 84	4469.42
2	5/21/01	-	19.50	ND		4486.48	4466.98
3	5/22/01	-	19.64	ND		4484.37	4464 73
4	5/22/01	-	9.26	ND		4476.05	4466.79
5 *	5/22/01	-	4.41	ND		4467.11	4462 70
6	5/22/01	-	4 83	ND		4465.24	4460.41
7	(paved over by City contractor several years ago; located & uncovered in January 2002)					4474.79	
8	(hit by e snowplow & ceved in several years ago)					4481.91	
89-1						4458.45	not measured
89-2	5/18/01	-	25.24	ND		4479 72	4454 48
89-3	5/23/01	-	20.00	ND		4493 04	4473.04
89-4	5/21/01	-	22.41	ND		4489.46	4467.05
89-6	5/22/01	-	25.43	ND		4480.17	4454.74
89-7						4495.59	not measured
89-9	5/23/01	-	21.88	ND		4493.18	4471.30
89-10	5/22/01	-	25.95	ND		4480.95	4455.00
90-2B						4478 87	not measured
90-3	5/18/01	-	7.25	ND		4460.23	4452.98
92-1	5/23/01	-	24.75	ND		4495.29	4470 54
92-2	5/18/01	-	5.48	ND		4457.90	4452.42
92-3	5/19/01	-	23.61	ND		-	no survey
92-4	5/21/01	-	22.88	ND	replaced flush-mount wellhead, not yet surveyed		
94-1	5/18/01	-	8.43	ND		4451.19	4442.76
94-2	5/18/01	-	4.73	ND		4458.95	4454 22
95-1	4/5/01	23 55	24 30	0.75	0 66	-	no survey
B-Street	5/23/01	not measured - operating				4498.53	
Rainbow	5/18/01	not measured - operating				4462.32	
RW-1	5/19/01	trace	18 45	trace		-	no survey
RW-2	4/9/01	trace	18.30	trace		-	no survey
RW-3	4/5/01	18.38	18.45	0.07	0 06	-	no survey
RW-4	4/5/01	18 63	19.14	0 51	0 45	-	no survey
RW-5	(inadvertenly (inadvertenly covered during work along rail lines; located and uncovered in February 2002)						
RW-6	4/5/01	18.09	18 46	0.37	0.33	-	no survey
RW-7	5/19/01	24.15	24.26	0 11	0 10	4493.00	4468 84
RW-8	5/19/01	22 73	22.82	0.09	0.08	4489.36	4466.62
RW-9	4/5/01	24 48	24 49	0.01	0.01	4489.34	4464 86
HRO-6				(next to HRO-7)		4494 23	not measured
HRO-7	5/19/01	24 22	24.89	0 67	0 59	-	no survey
HRO-9	5/19/01	25.86	25.87	0.01	0.01	-	no survey
HRO-10				(next to HRO-9)		-	not measured
HRO-11	(inadvertenly covered during work along rail lines)					-	
HRO-12	(inadvertenly covered during work along rail lines)					4491.34	
HRO-13				(near RW-1)		4491.04	not measured
HRO-14	(inadvertenly covered during work along rail lines)					-	
HRO-15	(inedvertenly covered during work along rail lines)					-	
HRO-16	(Inadvertenly covered during work along rail lines)					-	
HRO-19	(inadvertenly covered during work along rail lines)					4492.00	
HRO-20				(next to RW-7)		4493.67	not measured
HRO-21	4/5/01	-	23.44	ND		4489 60	4466.16
HRO-22	5/19/01	22.32	22.34	0.02	0.02	4490.76	4468 44
HRO-23	4/5/01	24.65	24.66	0.01	0.01	4489.48	4464 83
HRO-24	5/19/01	24 4	24.41	0.01	0.01	4493.28	4468.88
LPZ-100	(welded shut)			(near LPZ-150)		-	
(LPZ-150)	5/19/01	25.32	25.34	0.02	0.02	-	no survey
LG-11						4497	not measured
LG-12	7/1/01	-	16.97	ND		-	no survey

Well locations shown in parentheses were not required to be measured as part of the semiannual events, the rest were.

* - Unreliable measuring point elevation (damaged wellhead)

Product-containing well groundwater surface corrected to water-only simulation using a product density factor of .88

ND - not detected

SWL = static water level

Table 7.0

May 2001

Water Level and Product Thickness Measurements

Location	Date Measured	Product Depth [feet below TOC]	Water Depth [feet below TOC]	Product Thickness [feet]	Product Correction [feet]	TOC Elevation [feet]	Corrected SWL Elevation [ft]
LB-4	4/5/01	23.63	24.20	0.57	0.50	4494.88	4471.18
LS-6	7/1/01	trace	19.75	trace		4501.64	4481.89
LS-11	5/18/01	-	6.27	ND		4460.37	4454.10
L-87-2	5/17/01	-	26.24	ND		4491.74	4465.50
L-87-3	5/18/01	-	26.21	ND		4482.58	4456.37
L-87-4	5/17/01	-	24.01	ND		4494.38	4470.37
L-87-5	5/23/01	-	25.16	ND		4495.24	4470.08
L-87-7	5/17/01	-	24.34	ND		4492.83	4468.49
L-87-8	5/17/01	-	23.53	ND		4490.16	4466.63
L-88-9*	7/1/01	trace	20.93	trace		4501.02	4480.09
L-88-10	5/17/01	-	24.55	ND		4483.80	4459.25
L-88-13	5/17/01	-	25.55	ND		4488.59	4463.04
1	5/21/01	-	19.42	ND		4488.84	4469.42
2	5/21/01	-	19.50	ND		4486.48	4466.98
3	5/22/01	-	19.64	ND		4484.37	4464.73
4	5/22/01	-	9.26	ND		4476.05	4466.79
5 *	5/22/01	-	4.41	ND		4467.11	4462.70
6	5/22/01	-	4.83	ND		4465.24	4460.41
7	(paved over by City contractor several years ago; located & uncovered in January 2002)					4474.79	
8	(hit by a snowplow & caved in several years ago)					4481.91	
89-1						4458.45	not measured
89-2	5/18/01	-	25.24	ND		4479.72	4454.48
89-3	5/23/01	-	20.00	ND		4493.04	4473.04
89-4	5/21/01	-	22.41	ND		4489.46	4467.05
89-6	5/22/01	-	25.43	ND		4480.17	4454.74
89-7						4495.59	not measured
89-9	5/23/01	-	21.88	ND		4493.18	4471.30
89-10	5/22/01	-	25.95	ND		4480.95	4455.00
90-2B						4478.87	not measured
90-3	5/18/01	-	7.25	ND		4460.23	4452.98
92-1	5/23/01	-	24.75	ND		4495.29	4470.54
92-2	5/18/01	-	5.48	ND		4457.90	4452.42
92-3	5/19/01	-	23.61	ND		-	no survey
92-4	5/21/01	-	22.88	ND	replaced flush-mount wellhead; not yet surveyed		
94-1	5/18/01	-	8.43	ND		4451.19	4442.76
94-2	5/18/01	-	4.73	ND		4458.95	4454.22
95-1	4/5/01	23.55	24.30	0.75	0.66	-	no survey
B-Street	5/23/01	not measured - operating				4498.53	
Rainbow	5/18/01	not measured - operating				4462.32	
RW-1	5/19/01	trace	18.45	trace		-	no survey
RW-2	4/9/01	trace	18.30	trace		-	no survey
RW-3	4/5/01	18.38	18.45	0.07	0.06	-	no survey
RW-4	4/5/01	18.63	19.14	0.51	0.45	-	no survey
RW-5	(inadvertenly (inadvertenly covered during work along rail lines; located and uncovered in February 2002)						
RW-6	4/5/01	18.09	18.46	0.37	0.33	-	no survey
RW-7	5/19/01	24.15	24.26	0.11	0.10	4493.00	4468.84
RW-8	5/19/01	22.73	22.82	0.09	0.08	4489.36	4466.62
RW-9	4/5/01	24.48	24.49	0.01	0.01	4489.34	4464.86
HRO-6				(next to HRO-7)		4494.23	not measured
HRO-7	5/19/01	24.22	24.89	0.67	0.59	-	no survey
HRO-9	5/19/01	25.86	25.87	0.01	0.01	-	no survey
HRO-10				(next to HRO-9)		-	not measured
HRO-11	(inadvertenly covered during work along rail lines)					-	
HRO-12	(inadvertenly covered during work along rail lines)					4491.34	
HRO-13				(near RW-1)		4491.04	not measured
HRO-14	(inadvertenly covered during work along rail lines)					-	
HRO-15	(inadvertenly covered during work along rail lines)					-	
HRO-15	(inadvertenly covered during work along rail lines)					-	
HRO-19	(inadvertenly covered during work along rail lines)					4492.00	
HRO-20				(next to RW-7)		4493.67	not measured
HRO-21	4/5/01	-	23.44	ND		4489.60	4466.16
HRO-22	5/19/01	22.32	22.34	0.02	0.02	4490.76	4468.44
HRO-23	4/5/01	24.65	24.66	0.01	0.01	4489.48	4464.83
HRO-24	5/19/01	24.4	24.41	0.01	0.01	4493.28	4468.88
LPZ-100	(welded shut)			(near LPZ-150)		-	
(LPZ-150)	5/19/01	25.32	25.34	0.02	0.02	-	no survey
LG-11						4497	not measured
LG-12	7/1/01	-	16.97	ND		-	no survey

Well locations shown in parentheses were not required to be measured as part of the semiannual events; the rest were.

* - Unreliable measuring point elevation (damaged wellhead)

Product-containing well groundwater surface corrected to water-only simulation using a product density factor of .88

ND - not detected

SWL = static water level

Table 8.0

December 2001
Water Level and Product Thickness Measurements

Location	Date Measured	Product Depth [feet below TOC]	Water Depth [feet below TOC]	Product Thickness [feet]	Product Correction [feet]	TOC Elevation [feet]	Corrected SWL Elevation [ft]
LB-4	12/13/01	23.00	23.23	0.23	0.20	4494.88	4471.85
LS-6	12/13/01	-	22.34	ND		4501.64	4479.30
LS-11	12/13/01	-	9.26	ND		4460.37	4451.11
L-87-2	12/13/01	-	27.99	ND		4491.74	4463.75
L-87-3	12/14/01	-	26.99	ND		4482.58	4455.59
L-87-4	12/13/01	-	23.36	ND		4494.38	4471.02
L-87-5	12/14/01	-	24.81	ND		4495.24	4470.43
L-87-7	12/12/01	23.92	24.34	0.42	0.37	4492.83	4468.86
L-87-8	12/13/01	23.30	24.06	0.76	0.67	4490.16	4466.77
L-88-9*	12/13/01	-	23.36	ND		4501.02	*
L-88-10	11/28/01	-	25.12	ND		4483.80	4458.68
L-88-13	12/12/01	-	25.60	ND		4488.59	4462.99
1	12/14/01	-	19.01	ND		4488.84	4469.83
2*	12/14/01	-	18.81**	ND		4486.48	*
3*	12/14/01	-	19.74***	ND		4484.37	*
4	12/14/01	-	9.22	ND		4476.05	4466.83
5*	12/14/01	-	5.74	ND		4467.11	*
6	12/14/01	-	6.08	ND		4465.24	4459.16
7	(paved over by City contractor several years ago; located and uncovered in January 2002)					4474.79	
8	(hit by a snowplow & caved in several years ago)					4481.91	
89-1	12/13/01	-	7.51	ND		4458.45	4450.94
89-2	(inadvertently not measured)					4479.72	
89-3	12/14/01	-	19.54	ND		4493.04	4473.50
89-4	12/14/01	-	21.86	ND		4489.46	4467.60
89-6	12/13/01	-	27.62	ND		4480.17	4452.55
89-7	12/13/01	-	28.50	ND		4495.59	4467.09
89-9	12/14/01	-	21.37	ND		4493.18	4471.81
89-10	12/14/01	-	28.01	ND		4480.95	4452.94
(90-1C)	12/19/01	23.22	23.25	0.03	0.03	4489.57	4466.35
90-2B	12/12/01	-	21.52	ND		4478.87	4457.35
90-3	11/27/01	-	10.72	ND		4460.23	4449.51
92-1	12/14/01	-	24.29	ND		4495.29	4471.00
92-2	11/28/01	-	9.59	ND		4457.90	4448.31
92-3	12/13/01	-	23.18	ND		-	no survey
92-4	12/13/01	-	22.18	ND		-	no survey
94-1	11/29/01	-	10.86	ND		4451.19	4440.33
94-2	11/28/01	-	9.18	ND		4458.95	4449.77
95-1	12/13/01	-	23.58	ND		-	no survey
B-Street	not measured - well operating		na			4498.53	
Rainbow	not measured		na			4462.32	
RW-1	12/12/01	-	18.23	ND		-	no survey
RW-2	12/12/01	-	17.84	ND		-	no survey
RW-3	12/12/01	18.04	18.14	0.10	0.09	-	no survey
RW-4	12/12/01	18.18	18.66	0.48	0.42	-	no survey
RW-5	(inadvertenly covered during work along rail lines; located and uncovered in February 2002)						
RW-6	12/12/01	17.52	18.16	0.64	0.56	-	no survey
RW-7	12/13/01	23.91	24.08	0.17	0.15	4493.00	4469.07
RW-8	12/13/01	22.65	22.96	0.31	0.27	4489.36	4466.67
RW-9	12/13/01	-	24.03	ND		4489.34	4465.31
(HR-1D)	12/13/01	23.62	23.83	0.21	0.18	-	no survey
(HRO-5)	12/13/01	23.58	23.62	0.04	0.04	-	no survey
HRO-6	12/13/01	23.77	24.19	0.42	0.37	4494.23	4470.41
HRO-7	12/13/01	23.89	24.44	0.55	0.48	-	no survey
(HRO-8)	12/13/01	25.21	25.67	0.46	0.40	-	no survey
HRO-9	12/13/01	25.62	25.66	0.04	0.04	-	no survey
HRO-10	12/13/01	-	27.09	ND		-	no survey
HRO-11	(inadvertenly covered during work along rail lines)					-	
HRO-12	(inadvertenly covered during work along rail lines)					4491.34	
HRO-13	12/13/01	-	23.61	ND		4491.04	4467.43
HRO-14	(inadvertenly covered during work along rail lines)					-	
HRO-15	(inadvertenly covered during work along rail lines)					-	
HRO-16	(inadvertenly covered during work along rail lines)					-	
HRO-19	(inadvertenly covered during work along rail lines)					4492.00	
HRO-20	12/13/01	-	24.50	ND		4493.67	4469.17
HRO-21	12/13/01	-	22.88	ND		4489.60	4466.72
HRO-22	12/13/01	-	24.37	ND		4490.76	4466.39
HRO-23	12/13/01	-	24.23	ND		4489.48	4465.25
HRO-24	12/13/01	-	24.14	ND		4493.28	4469.14
(LPZ-50)	12/13/01	25.62	25.71	0.09	0.08	-	no survey
LPZ-100	(welded shut)						
(LPZ-150)	12/13/01	trace	25.24	trace		-	no survey
LG-11	12/13/01	-	19.24	ND		4497	4477.76
LG-12	12/13/01	-	19.67	ND		-	no survey

* - Unreliable measuring point elevation (damaged wellhead)

** - to TOC (inner)

*** - to TOC (6" steel)

Well locations shown in parentheses were not required to be measured as part of the semiannual events; the rest were.

Product-containing well groundwater surface corrected to water-only simulation using a product density factor of .88

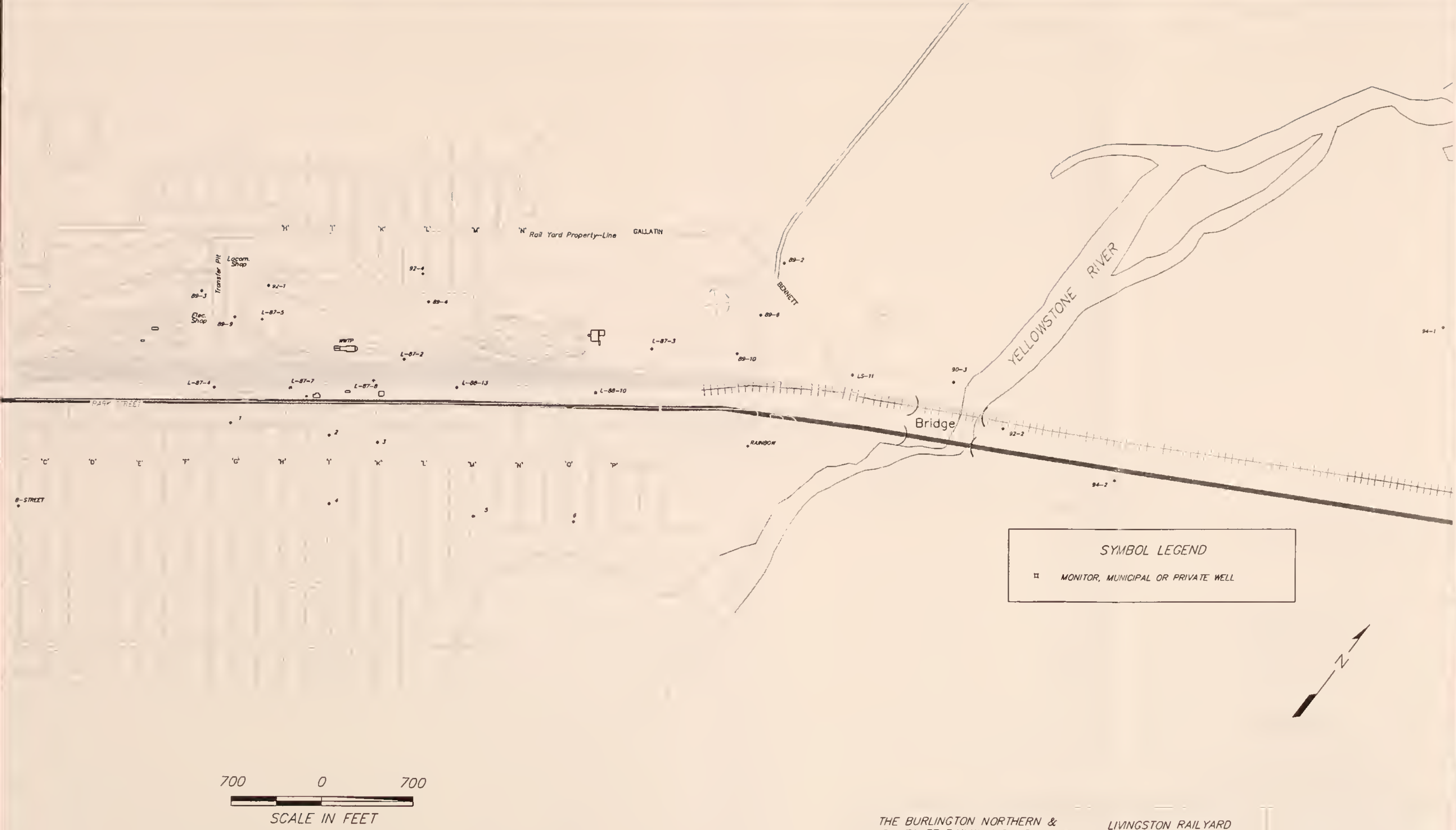
ND - not detected

SWL = static water level

Table 9.0

Well Construction Table
With December 2001 Product & SWL Measurements

Well	Product Depth [feet below TOC]	Water Depth [feet below TOC]	Water Depth [feet bgs]	Screened Interval [bgs]	TOC Stick-up above bgs [ft]
LB-4	23.00	23.23		17' to 27'	
LS-6*	-	22.34		15' to 25'	
LS-11	-	9.26		3.5' to 13.5'	
L-87-2	-	27.99		21' to 31'	
L-87-3	-	26.99		17' to 32.6'	
L-87-4	-	23.36		17' to 27'	
L-87-5	-	24.81		17' to 27'	
L-87-6	-	25.36	23.61	17' to 27'	1.77
L-87-7	23.92	24.34		17' to 27'	
L-87-8	23.30	24.06	21.685	17' to 27'	2.38
L-88-9*	-	23.36		19.6' to 29.6'	
L-88-10	-	25.12		19.4' to 29.4'	
L-88-11	-	20.30		19' to 29'	
L-88-12	-	25.29		31' to 41'	
L-88-13	-	25.60		31.5' to 41.5'	
1	-	19.01		15.8' to 25.8'	
2	-	18.81**		15' to 25'	
3	-	19.74***		14.7' to 24.7'	
4	-	9.22		5' to 15'	
5	-	5.74		3.2' to 13.2'	
6	-	6.08		3.2' to 13.2'	
7				16' to 31'	
8	(hit by a snowplow & caved in several years ago)			18.5' to 28.5'	
89-1	-	7.51		20' to 30'	
89-2				18' to 38'	
89-3	-	19.54		14' to 34'	
89-4	-	21.86		23' to 33'	
89-6	-	27.62		27' to 37'	
89-7	-	28.50		21' to 31'	
89-9	-	21.37		14' to 34'	
89-10	-	28.01		22' to 32'	
90-1C	23.22	23.25		16' to 26'	
90-2B	-	21.52		12.5' to 22.5'	
90-3	-	10.72		6' to 16'	
90-6	-	22.30		12.5' to 32.5'	
92-1	-	24.29		23.8' to 33.8'	
92-2	-	9.59		6' to 25'	
92-3	-	23.18	21.18	25' to 35.5'	2.00
92-4	-	22.18		24.8' to 34.8'	
94-1	-	10.86		27' to 37'	
94-2	-	9.18		27.5' to 37.5'	
95-1	-	23.58		15' to 32'	
B-Street		na			
Rainbow	not measured	na			
RW-1	-	18.23		na	
RW-2	-	17.84		na	
RW-3	18.04	18.14		na	
RW-4	18.18	18.66		na	
RW-5	not measured			na	
RW-6	17.52	18.16		na	
RW-7	23.91	24.08		13.5' to 28.5'	
RW-8	22.65	22.96		14' to 29'	
RW-9	-	24.03		15' to 30'	
HR-1D	23.62	23.83		19' to 34'	
HRO-5	23.58	23.62		17' to 37'	
HRO-6	23.77	24.19		18' to 28'	
HRO-7	23.89	24.44		18' to 28'	
HRO-8	25.21	25.67		15' to 30'	
HRO-9	25.62	25.66		15' to 30'	
HRO-10	-	27.09		14' to 34'	
HRO-11	(inadvertenly covered during work along rail lines)			17.2' to 37.2'	
HRO-12	(inadvertenly covered during work along rail lines)			11.5' to 36.5'	
HRO-13		23.61		18.5' to 38.5'	
HRO-14	(inadvertenly covered during work along rail lines)			17.7' to 37.7'	
HRO-15	(inadvertenly covered during work along rail lines)			20' to 40'	
HRO-16	(inadvertenly covered during work along rail lines)			18.2' to 38.2'	
HRO-19	(inadvertenly covered during work along rail lines)			12.9' to 37.9'	
HRO-20	-	24.50	22.21	15.5' to 25.5'	2.29
HRO-21	-	22.88	20.74	14.5' to 24.5'	2.14
HRO-22	-	24.37	22.50	15' to 25'	1.88
HRO-23	-	24.23	22.27	16' to 26'	1.96
HRO-24	-	24.14	22.09	15' to 25'	2.05
LPZ-50	25.62	25.71		na	
LPZ-100	(dry)	(dry)		na	
LPZ-150	trace	25.24		na	
LG-11*	-	19.24		12.1' to 22.1'	
LG-12*	-	19.67		11.1' to 21.1'	



THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY

ENVIROCON, INC.

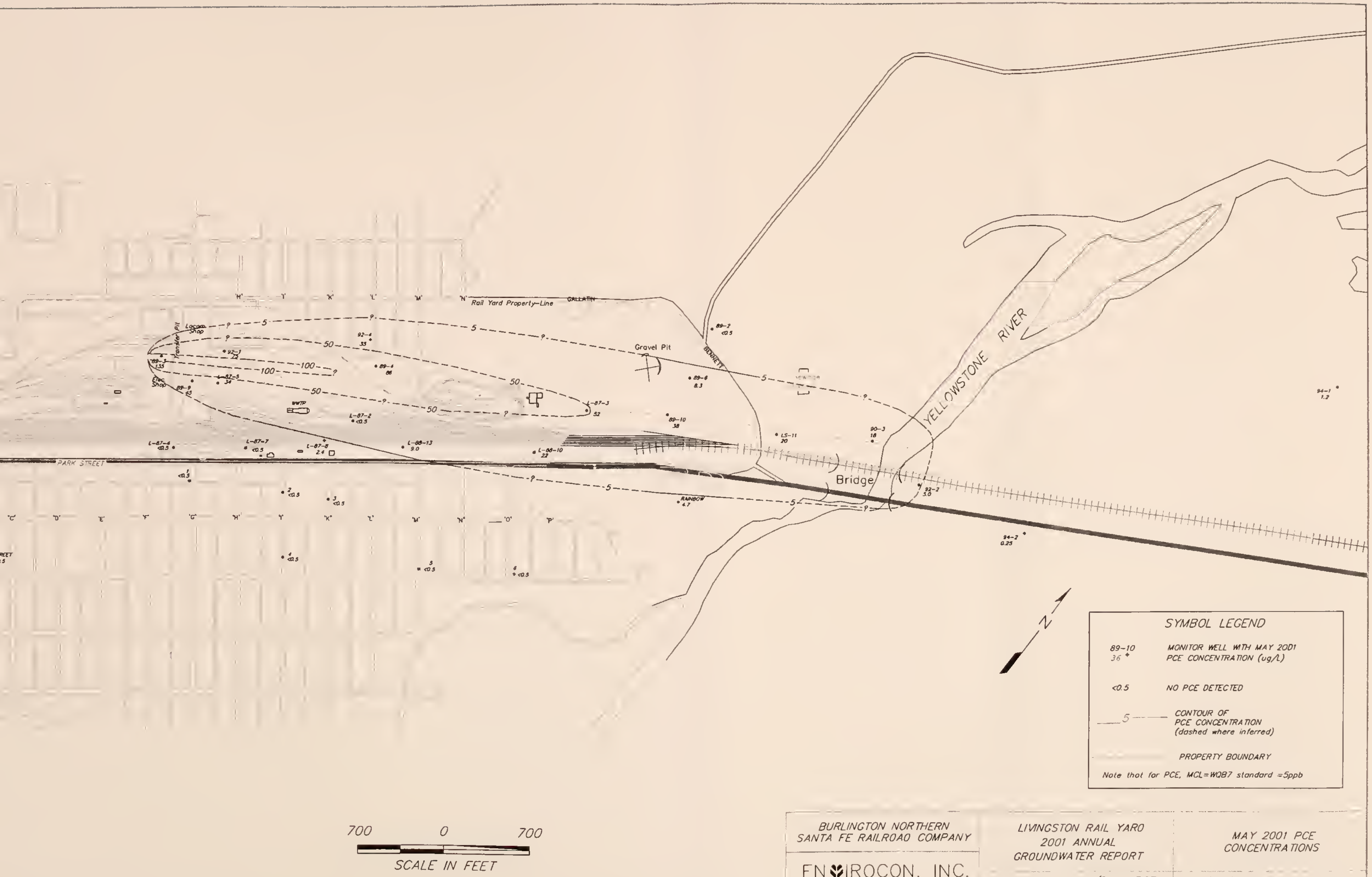
LIVINGSTON RAILYARD
2001 ANNUAL
GROUND WATER REPORT

140101-GWR NETWORK

GROUND WATER MONITORING
NETWORK LOCATIONS

10/31/01

FIGURE 1.0



BURLINGTON NORTHERN
SANTA FE RAILROAD COMPANY

ENVIROCON, INC.

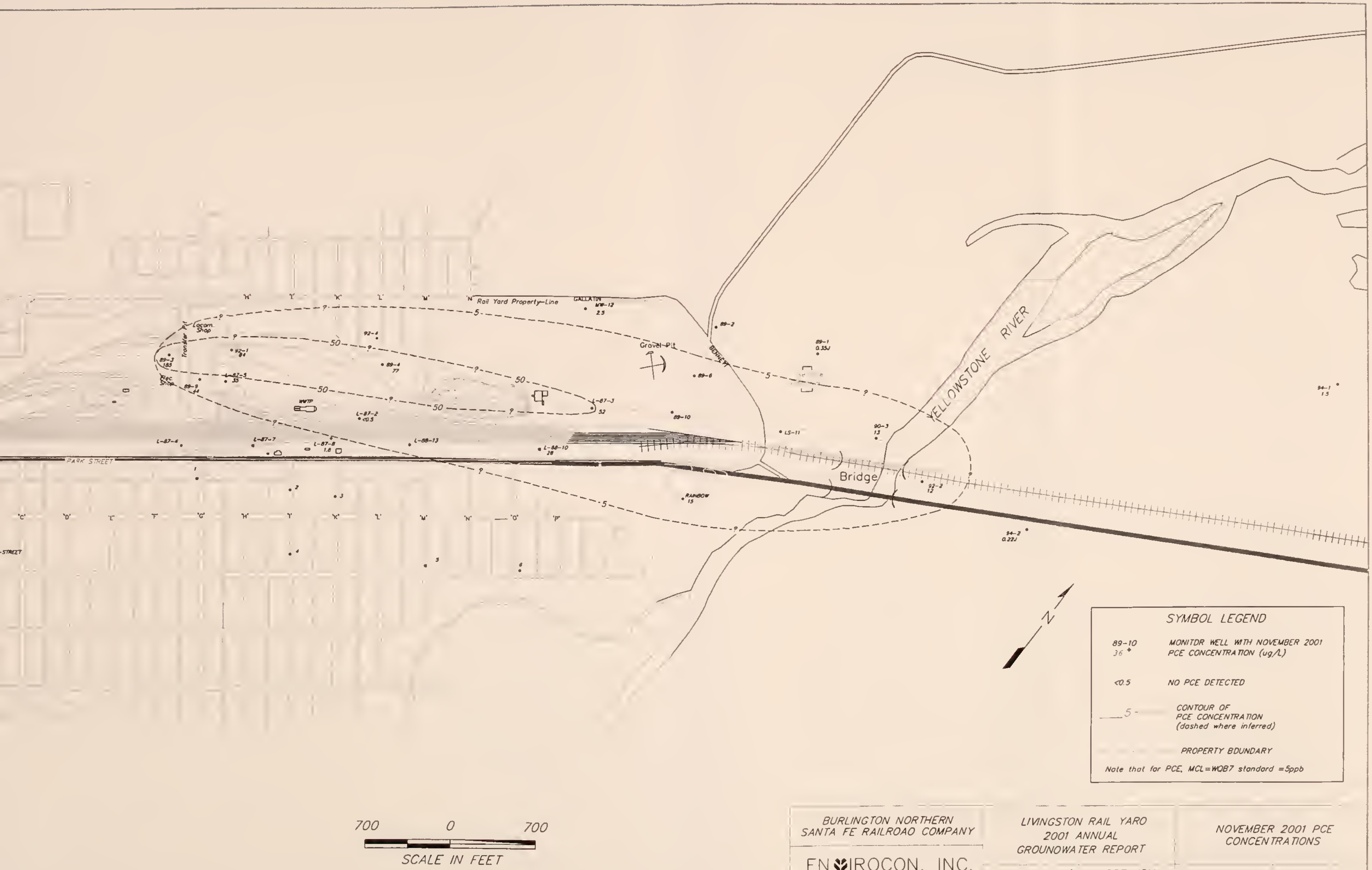
LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

Acad. file: 140101/2001-PCE

MAY 2001 PCE
CONCENTRATIONS

07/23/2001

FIGURE 2.0



BURLINGTON NORTHERN
SANTA FE RAILROAD COMPANY

ENVIROCON, INC.

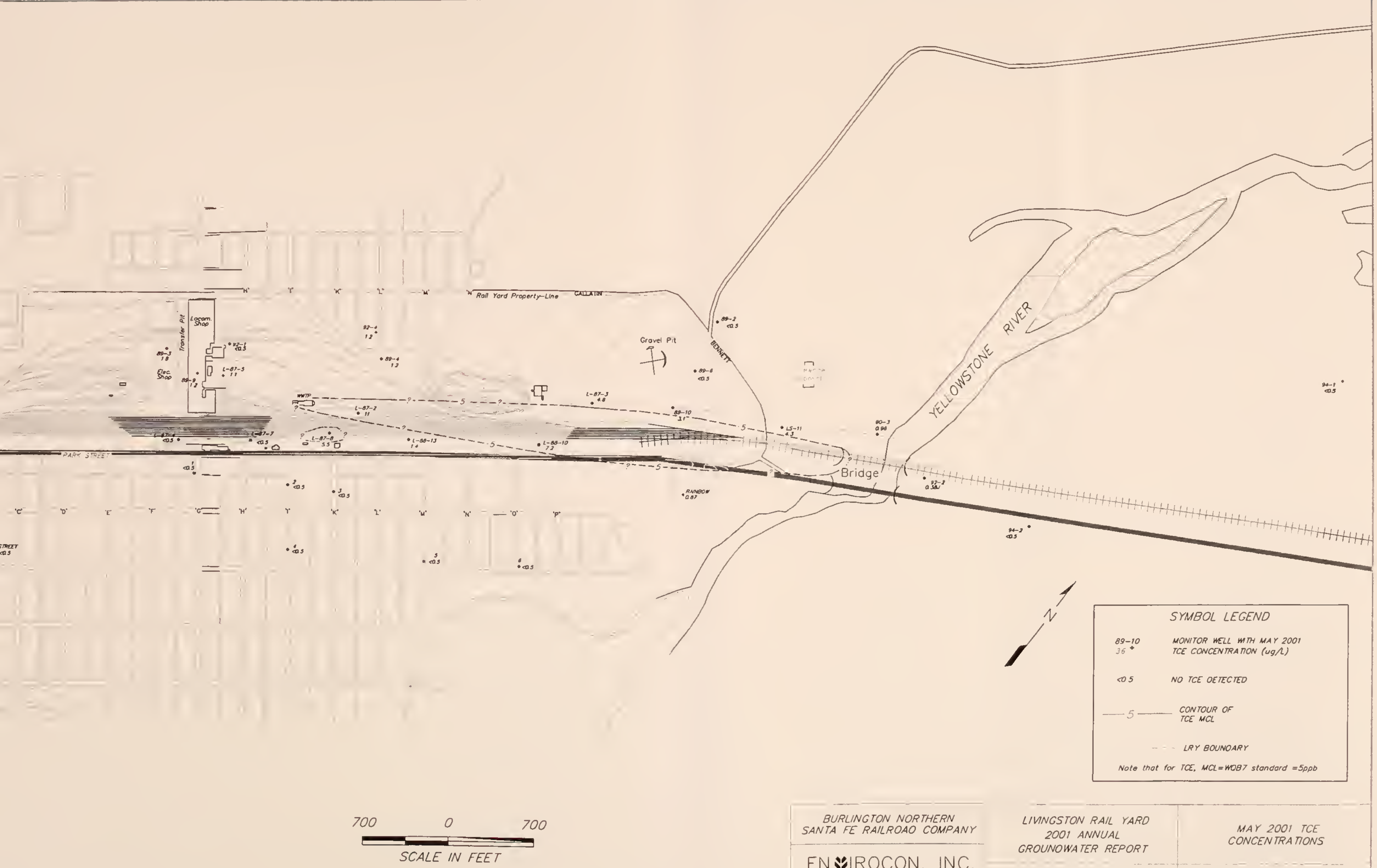
LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

File: 140101/2001-PCE NOV

NOVEMBER 2001 PCE
CONCENTRATIONS

07/23/2001

FIGURE 3.0



BURLINGTON NORTHERN
SANTA FE RAILROAD COMPANY

ENVIROCON, INC.

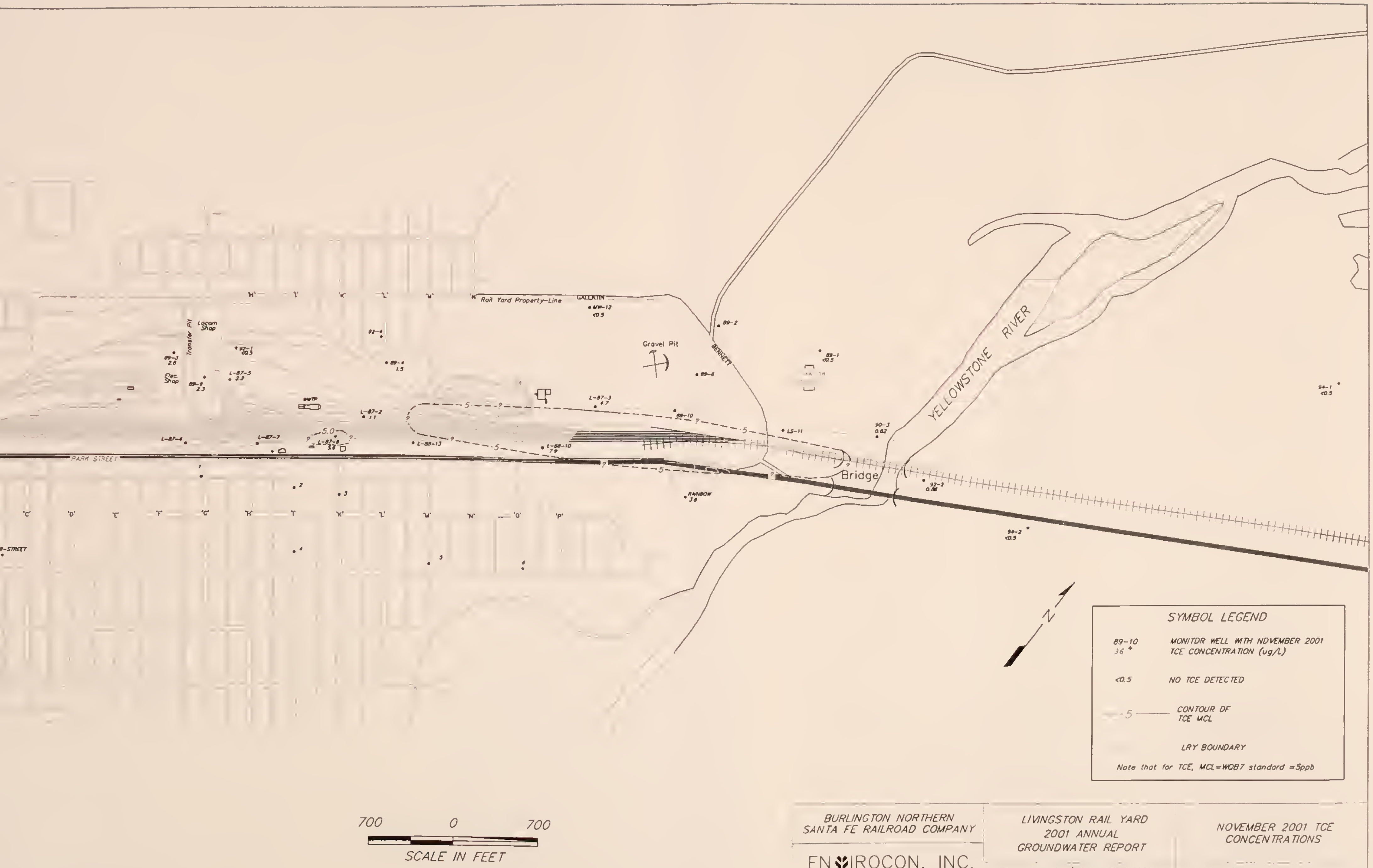
LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

Acad. file. 140101/2001-TCE

MAY 2001 TCE
CONCENTRATIONS

07/23/2001

FIGURE 4.0



BURLINGTON NORTHERN
SANTA FE RAILROAD COMPANY

ENVIROCON, INC.

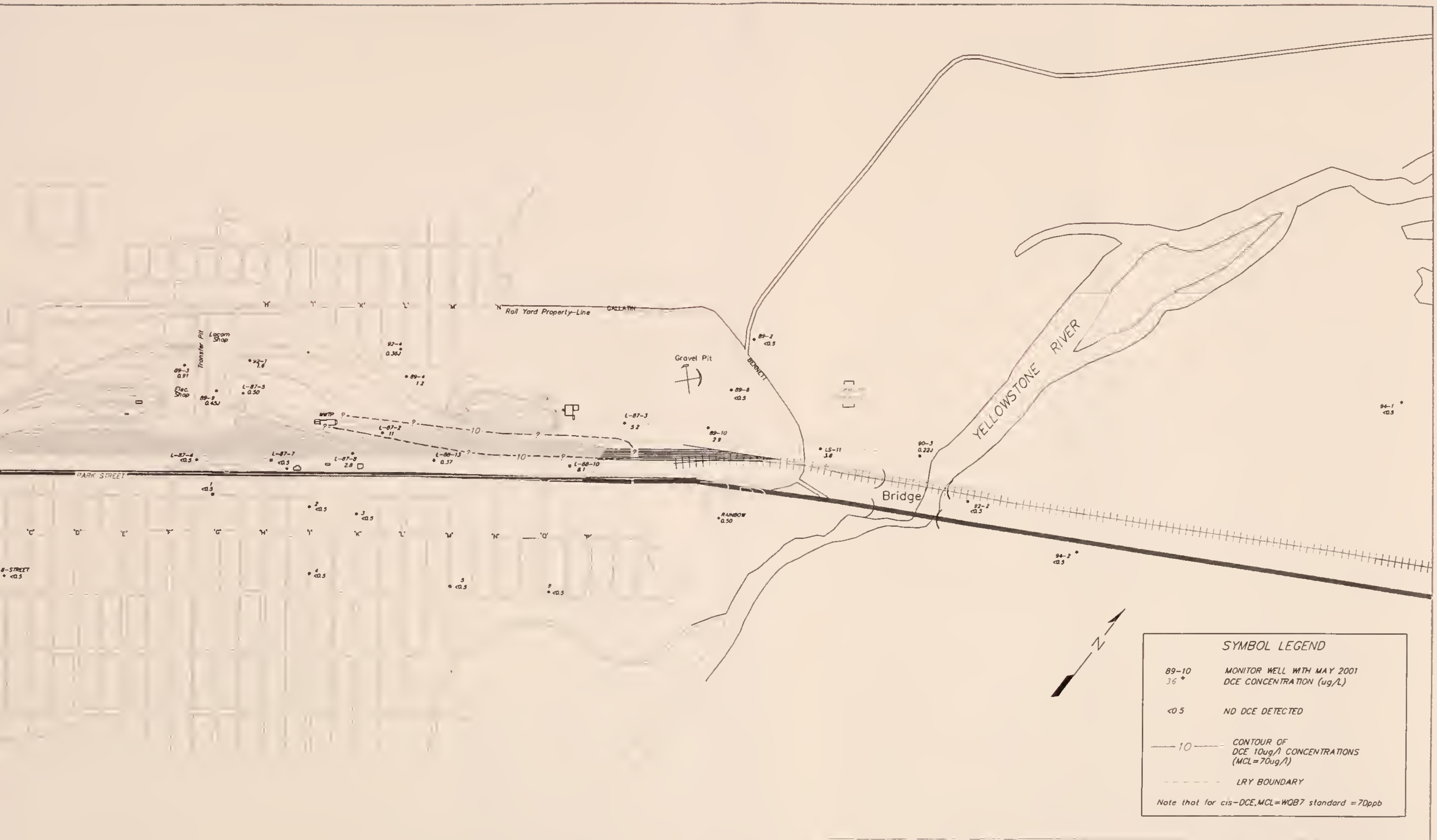
LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

File: 140101/2001-TCE NOV

NOVEMBER 2001 TCE
CONCENTRATIONS

07/23/2001

FIGURE 5.0



BURLINGTON NORTHERN
SANTA FE RAILROAD COMPANY

ENVIROCON, INC.

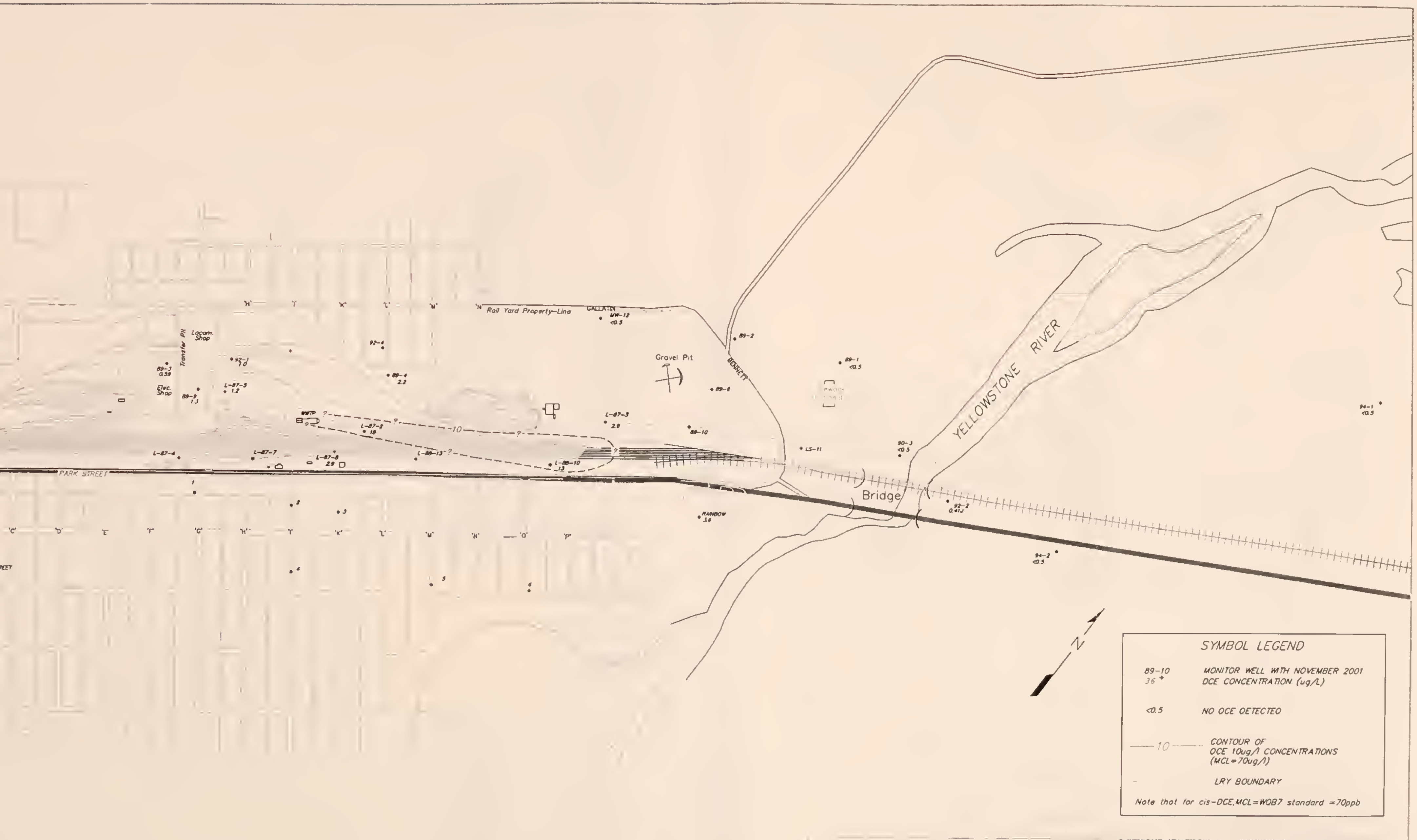
LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

Acad. file: 140101/2001-DCE

MAY 2001
cis-1,2-DCE
CONCENTRATIONS
IN GROUNDWATER

07/23/2001

FIGURE 6.0



SYMBOL LEGEND

89-10 36 ◆	MONITOR WELL WITH NOVEMBER 2001 DCE CONCENTRATION (ug/L)
<0.5	NO DCE DETECTED
—10—	CONTOUR OF DCE 10ug/l CONCENTRATIONS (MCL=70ug/l)
—	LRY BOUNDARY

Note that for cis-DCE.MCL=WQB7 standard =70ppb

BURLINGTON NORTHERN
SANTA FE RAILROAD COMPANY

ENVIROCON, INC.

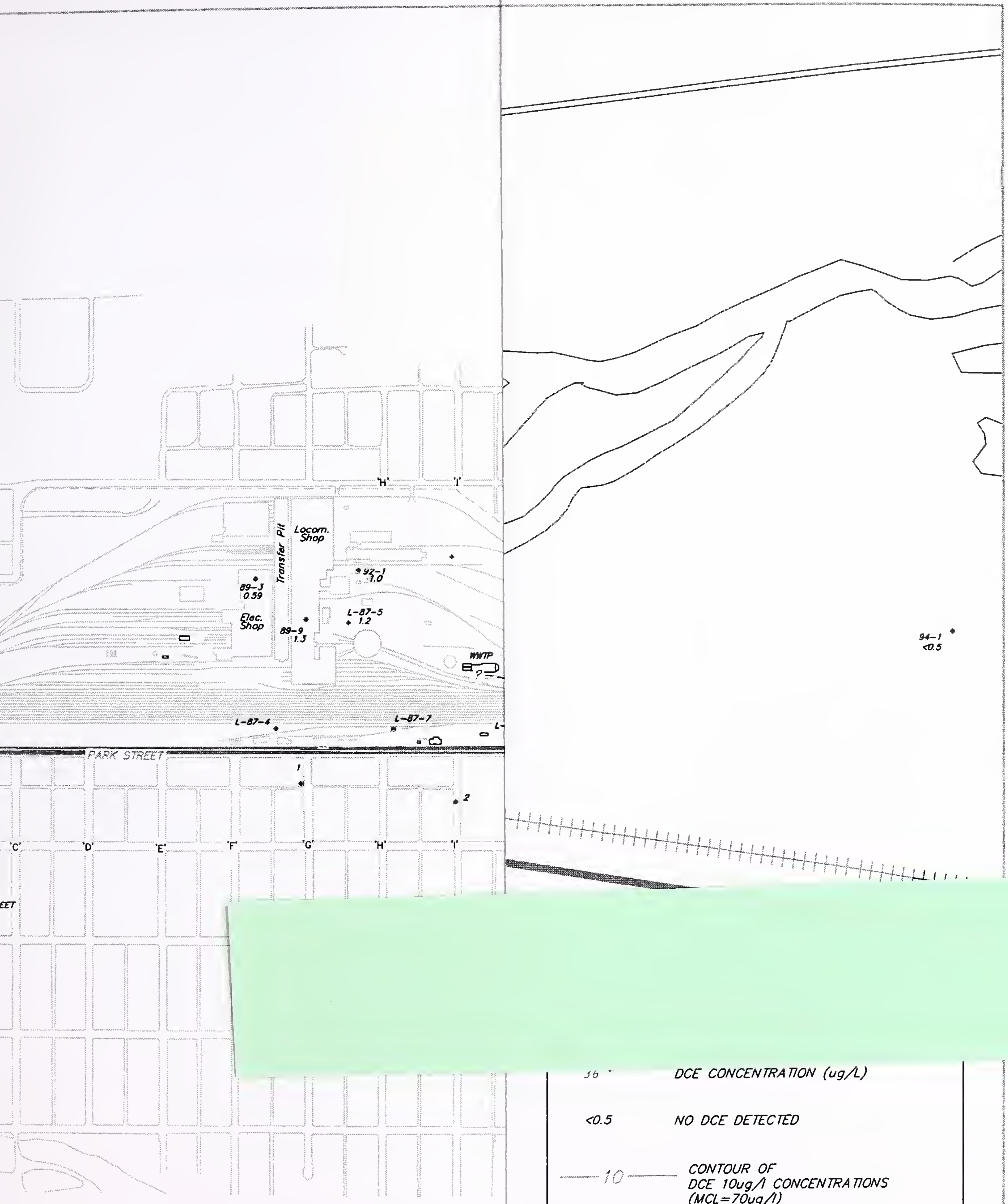
LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

File: 140101/2001-DCE NOV

NOVEMBER 2001
cis-1,2-DCE
CONCENTRATIONS
IN GROUNDWATER

07/23/2001

FIGURE 7.0



36 • DCE CONCENTRATION (ug/L)

<0.5 NO DCE DETECTED

—— 10 —— CONTOUR OF DCE 10ug/l CONCENTRATIONS (MCL=70ug/l)

– – – – – LRY BOUNDARY

Note that for cis-DCE,MCL=WQB7 standard =70ppb

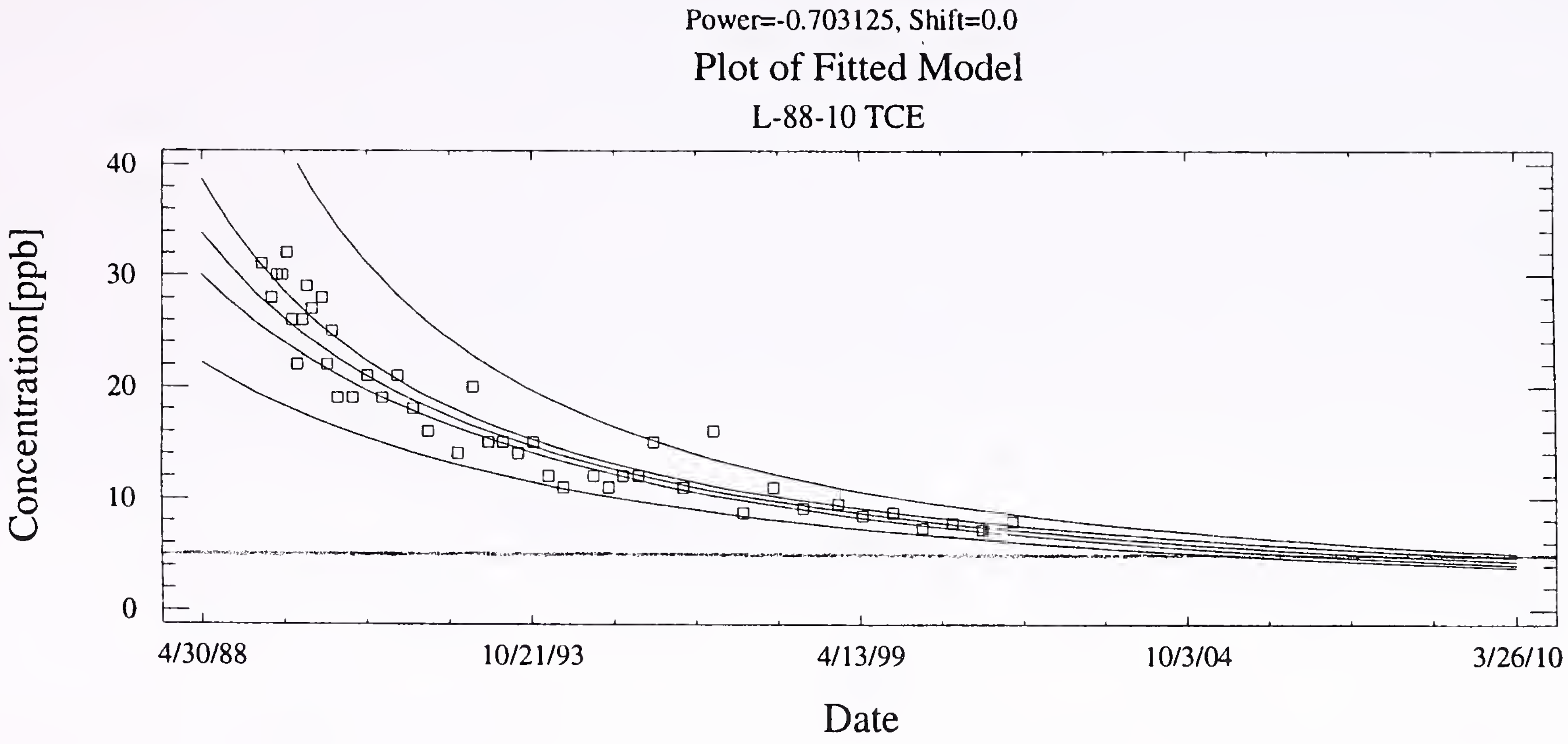
TON RAIL YARD
1 ANNUAL
VATER REPORT

NOVEMBER 2001
cis-1,2-DCE
CONCENTRATIONS
IN GROUNDWATER

/2001-DCE NOV

07/23/2001

FIGURE 7.0



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -1.7
ACTUAL DECLINE OBSERVED = 75%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
2008

THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY

ENVIROCON, INC.

LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

AutoCad FILE: L-88-10 TCE

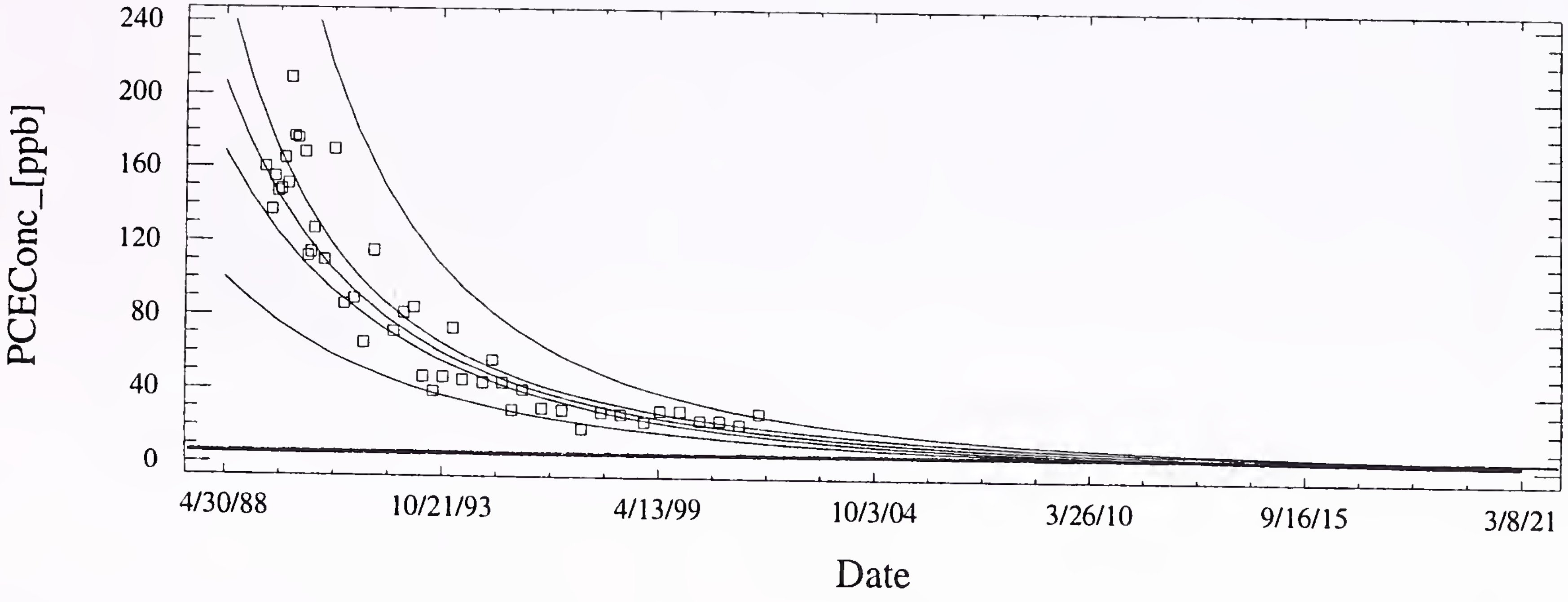
TRICHLOROETHENE
CONCENTRATIONS
FOR WELL L-88-10

FIGURE 8.0

Power=-0.335938, Shift=0.0

Plot of Fitted Model

L-88-10 PCE



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -12.6 ppb/yr
ACTUAL DECLINE OBSERVED = 87%

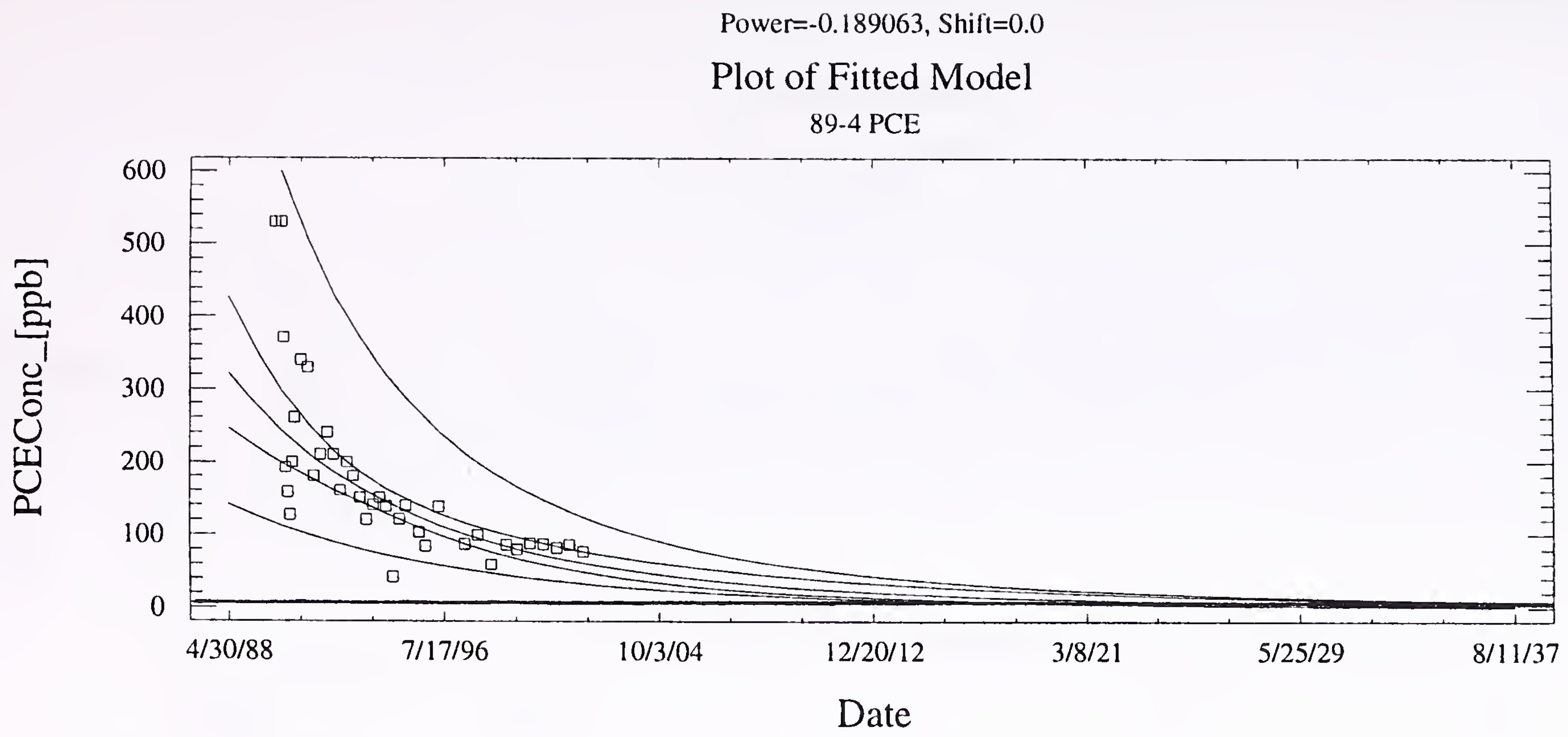
Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
2015

THE BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY	*LIVINGSTON RAIL YARD 2001 ANNUAL GROUNDWATER REPORT*	*TETRACHLOROETHENE CONCENTRATIONS FOR WELL L-88-10*
ENVIROCON, INC.	*AutoCad FILE: L-88-10 PCE*	*FIGURE 9.0*



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -13.4 ppb/yr
ACTUAL DECLINE OBSERVED = 85%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2029

THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY

ENVIROCON, INC.

LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

AutoCad FILE: 89-4 PCE

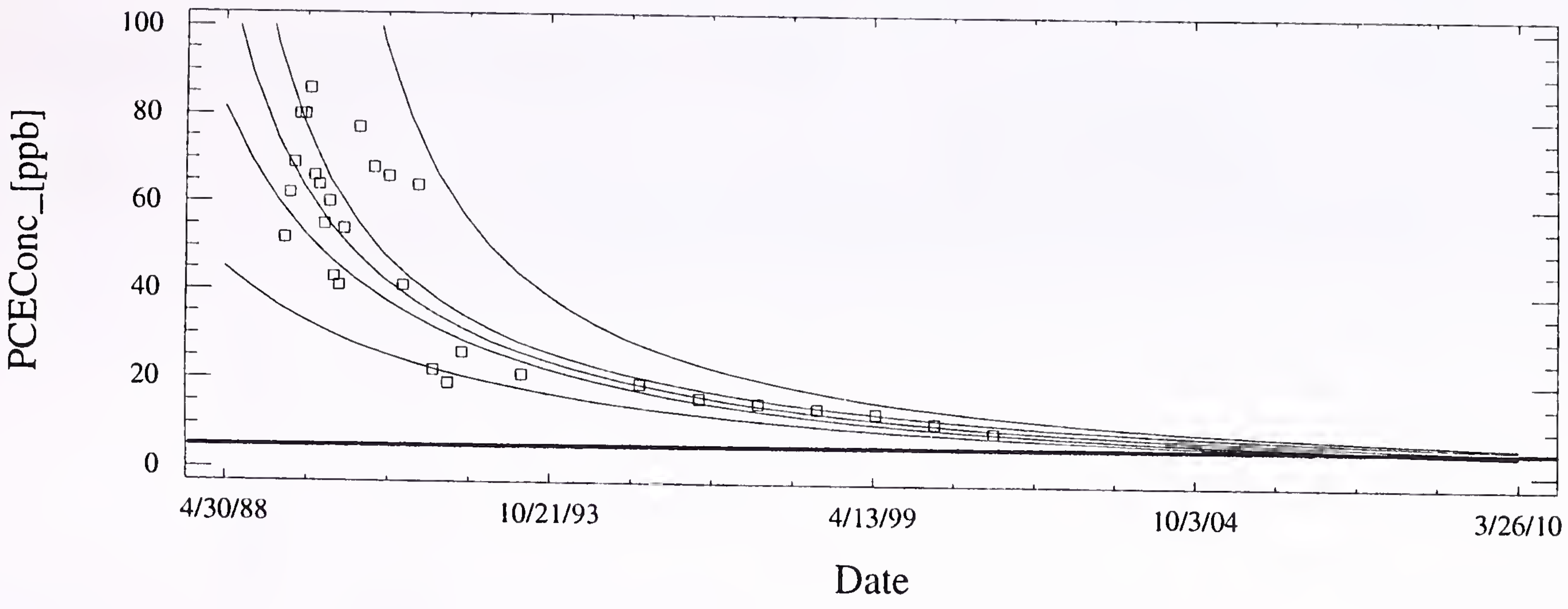
TETRACHLOROETHENE
CONCENTRATIONS
FOR WELL 89-4

FIGURE 10.0

Power=-0.725, Shift=0.0

Plot of Fitted Model

L-88-13 PCE



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -5.16 ppb/yr
ACTUAL DECLINE OBSERVED = 91%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2010

THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY

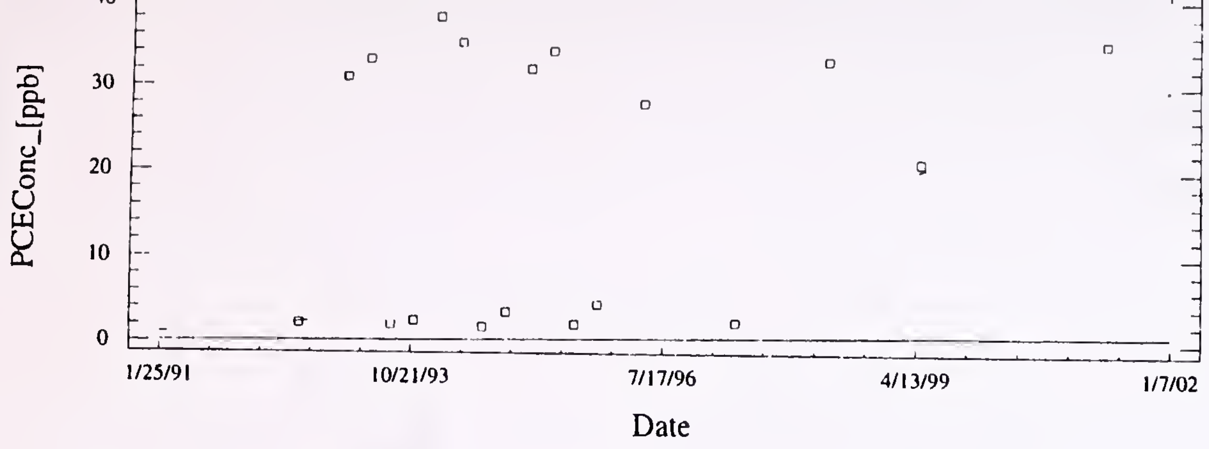
ENVIROCON, INC.

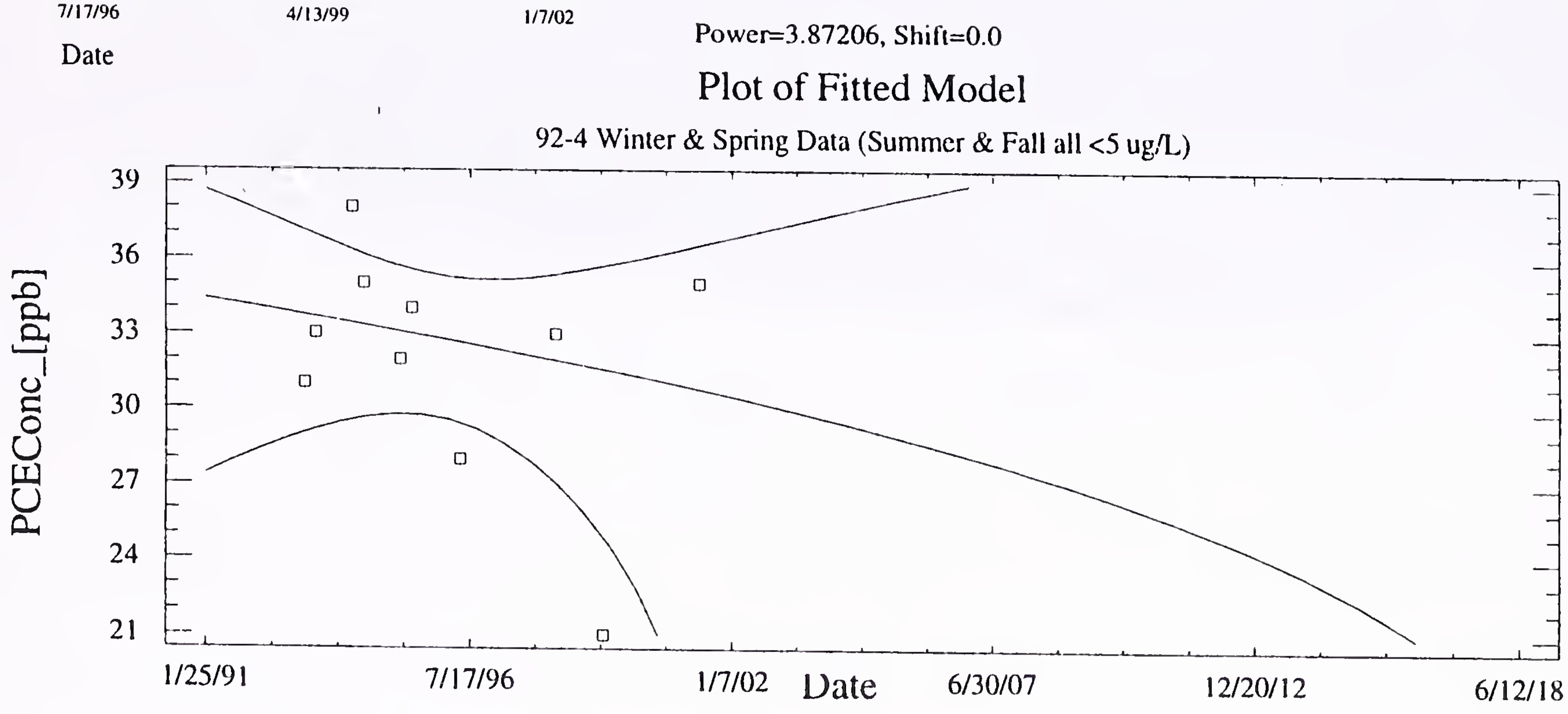
LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

AutoCad FILE: L-88-13 PCE

TETRACHLOROETHENE
CONCENTRATIONS
FOR WELL L-88-13

FIGURE 11.0





EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -.26 ppb/yr
ACTUAL DECLINE OBSERVED = 8%

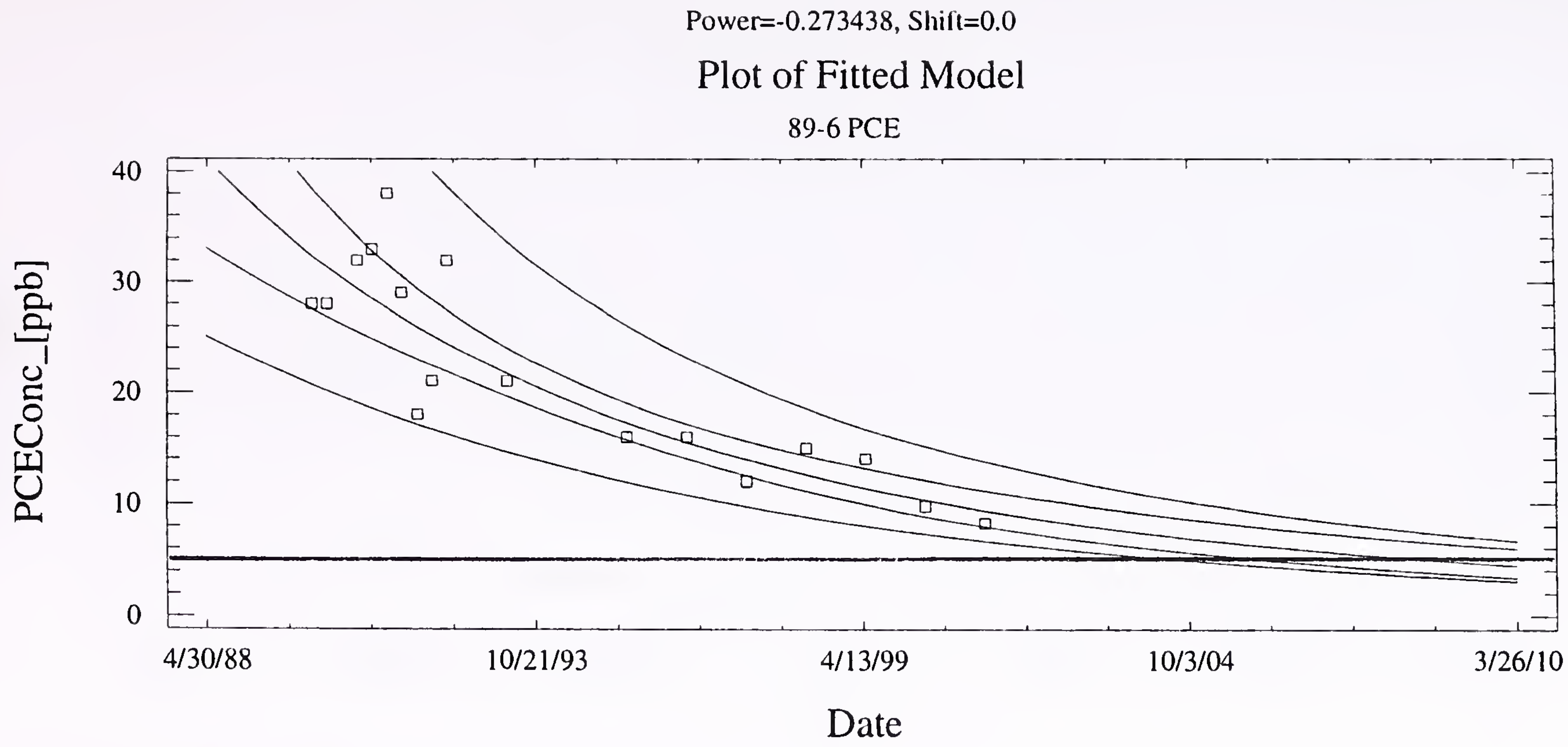
Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2067

THE BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY	LIVINGSTON RAIL YARD 2001 ANNUAL GROUNDWATER REPORT	TETRACHLOROETHENE CONCENTRATIONS FOR WELL 92-4
ENVIROCON, INC.	AutoCad FILE: 92-4 PCE	FIGURE 12.0



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -2.18 ppb/yr
ACTUAL DECLINE OBSERVED = 76%

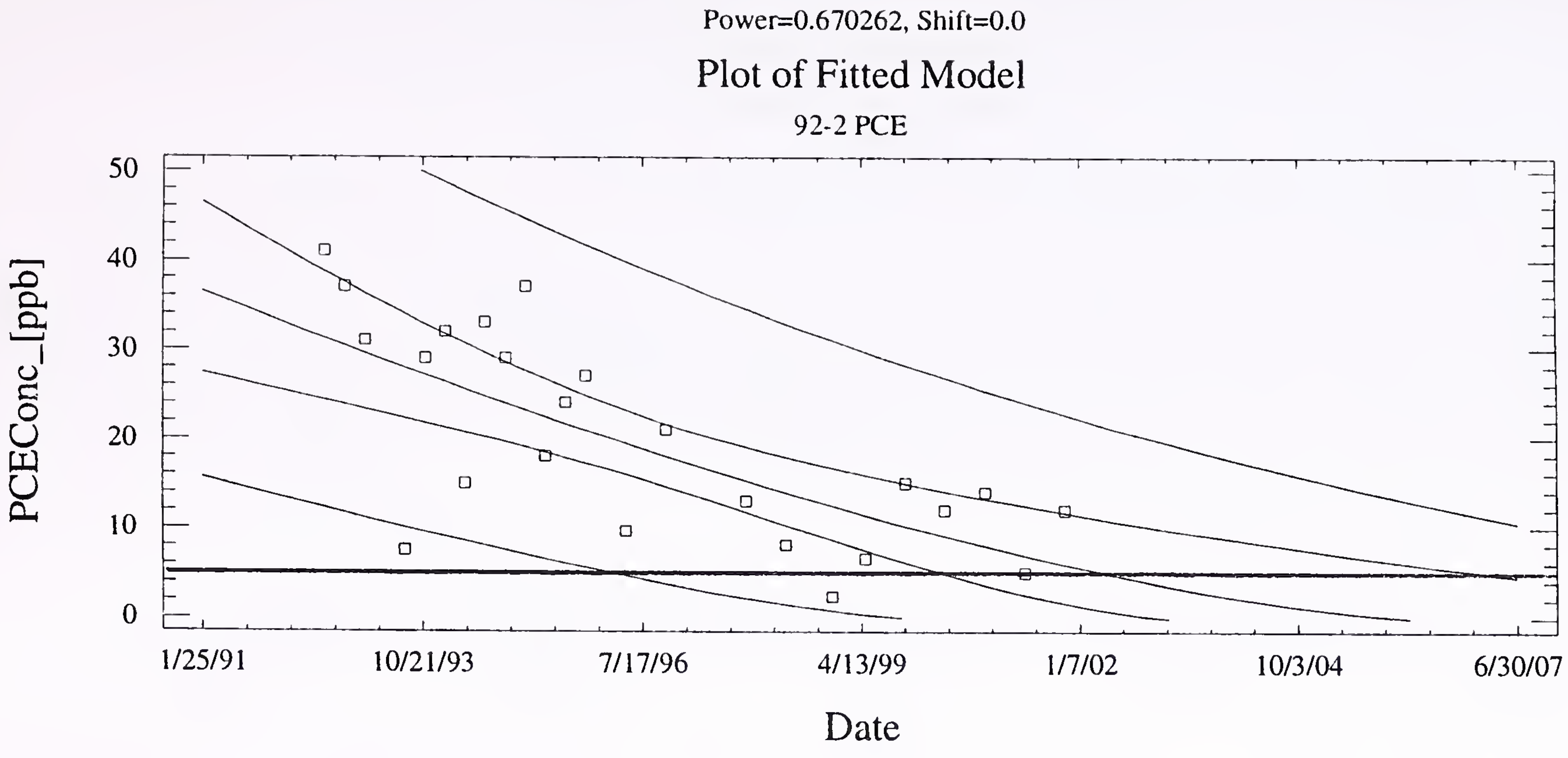
Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2010

THE BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY	*LIVINGSTON RAIL YARD 2001 ANNUAL GROUNDWATER REPORT*	*TETRACHLOROETHENE CONCENTRATIONS FOR WELL 89-6*
ENVIROCON, INC.	*AutoCad FILE: 89-6 PCE*	*FIGURE 13.0*


Power=0.670262, Shift=0.0

Plot of Fitted Model

92-2 PCE

EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -2.0 ppb/yr
ACTUAL DECLINE OBSERVED = 70%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

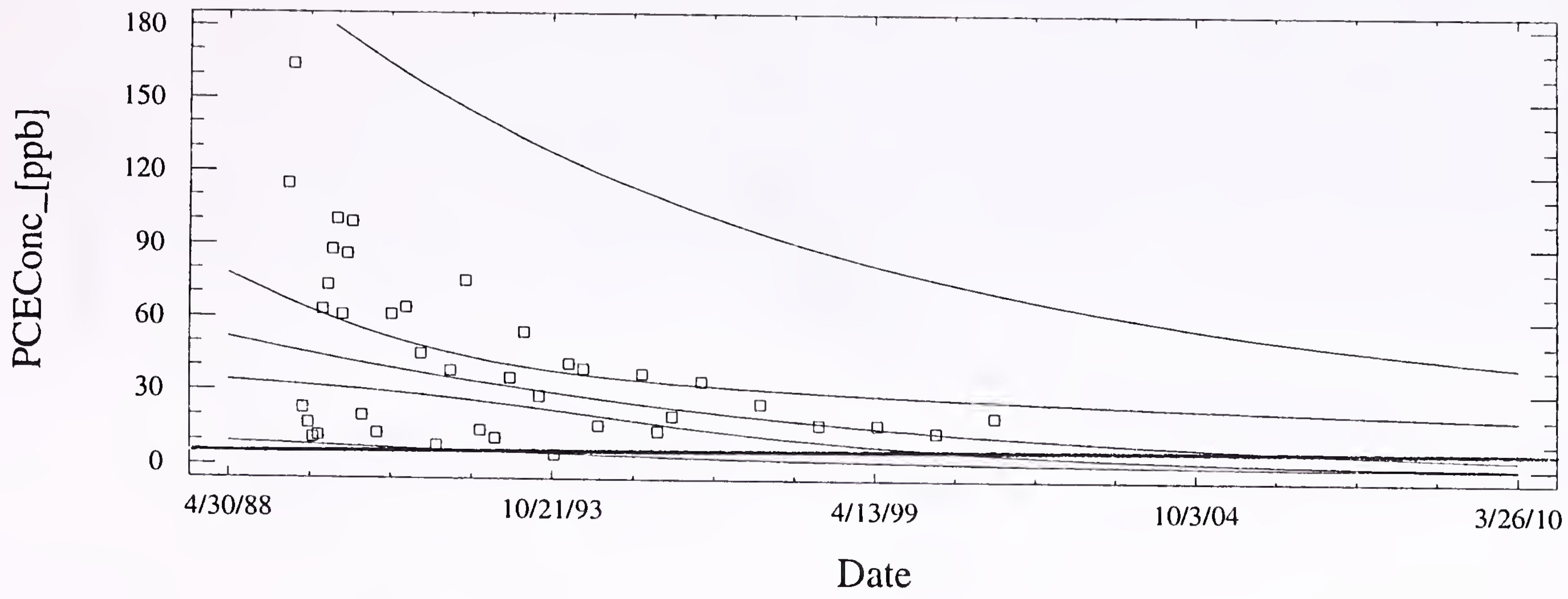
ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
2002

THE BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY	*LIVINGSTON RAIL YARD 2001 ANNUAL GROUNDWATER REPORT*	*TETRACHLOROETHENE CONCENTRATIONS FOR WELL 92–2*
ENVIROCON, INC.	*AutoCad FILE: 92–2 PCE*	*FIGURE 14.0*

Power=0.120387, Shift=0.0

Plot of Fitted Model

LS-11 PCE



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -2.9 ppb/yr
ACTUAL DECLINE OBSERVED = 85%

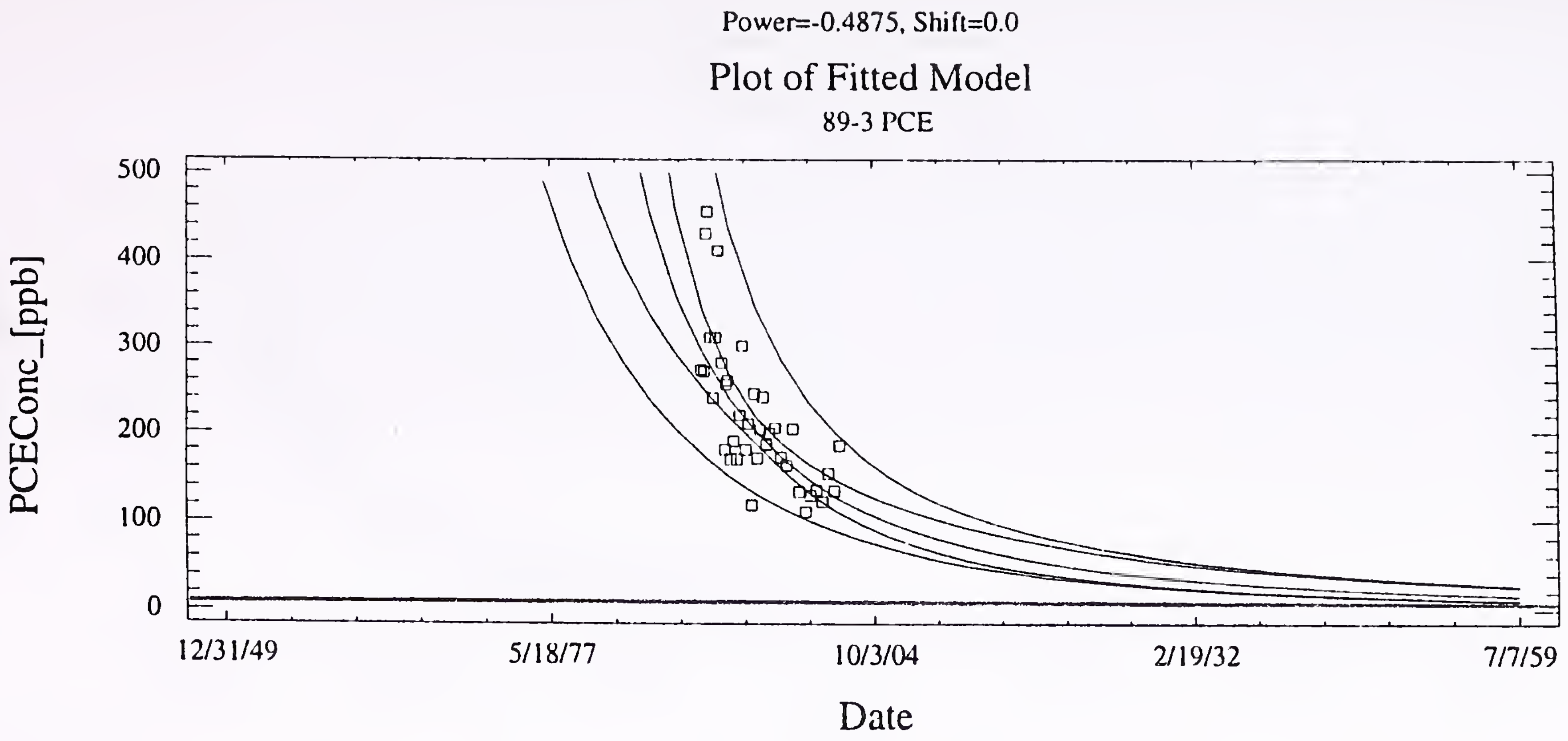
Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2007

THE BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY	*LIVINGSTON RAIL YARD 2001 ANNUAL GROUNDWATER REPORT*	*TETRACHLOROETHENE CONCENTRATIONS FOR WELL LS-11*
ENVIROCON, INC.	*AutoCad FILE: LS-11 PCE*	*FIGURE 15.0*



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -10.2 ppb/yr
ACTUAL DECLINE OBSERVED = 60%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2074

*THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY*

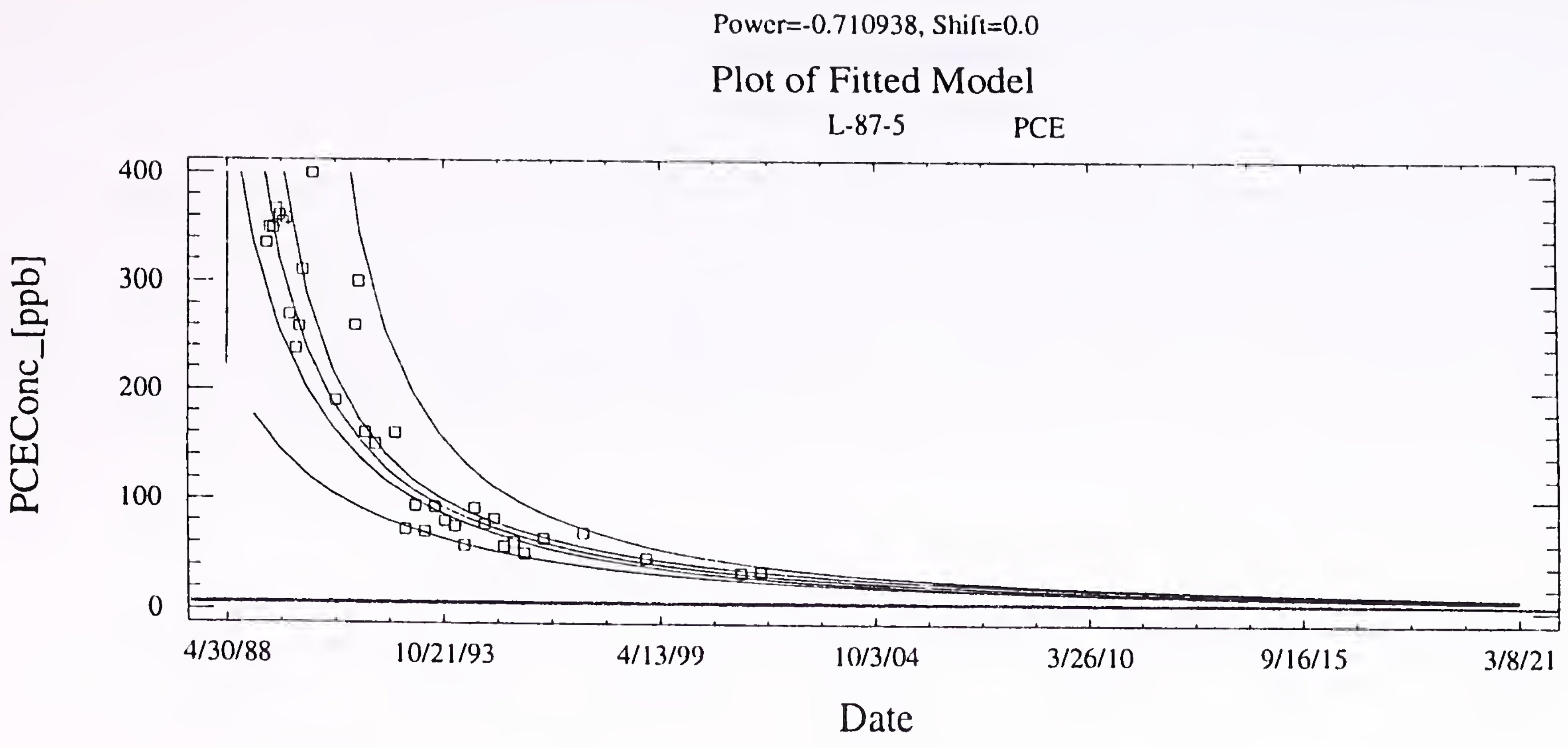
ENVIROCON, INC.

*LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT*

AutoCad FILE: 89-3 PCE

*TETRACHLOROETHENE
CONCENTRATIONS
FOR WELL 89-3*

FIGURE 16.0



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -28.3 ppb/yr
ACTUAL DECLINE OBSERVED = 90%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2026

THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY

ENVIROCON, INC.

LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

AutoCad FILE: L-87-5 PCE

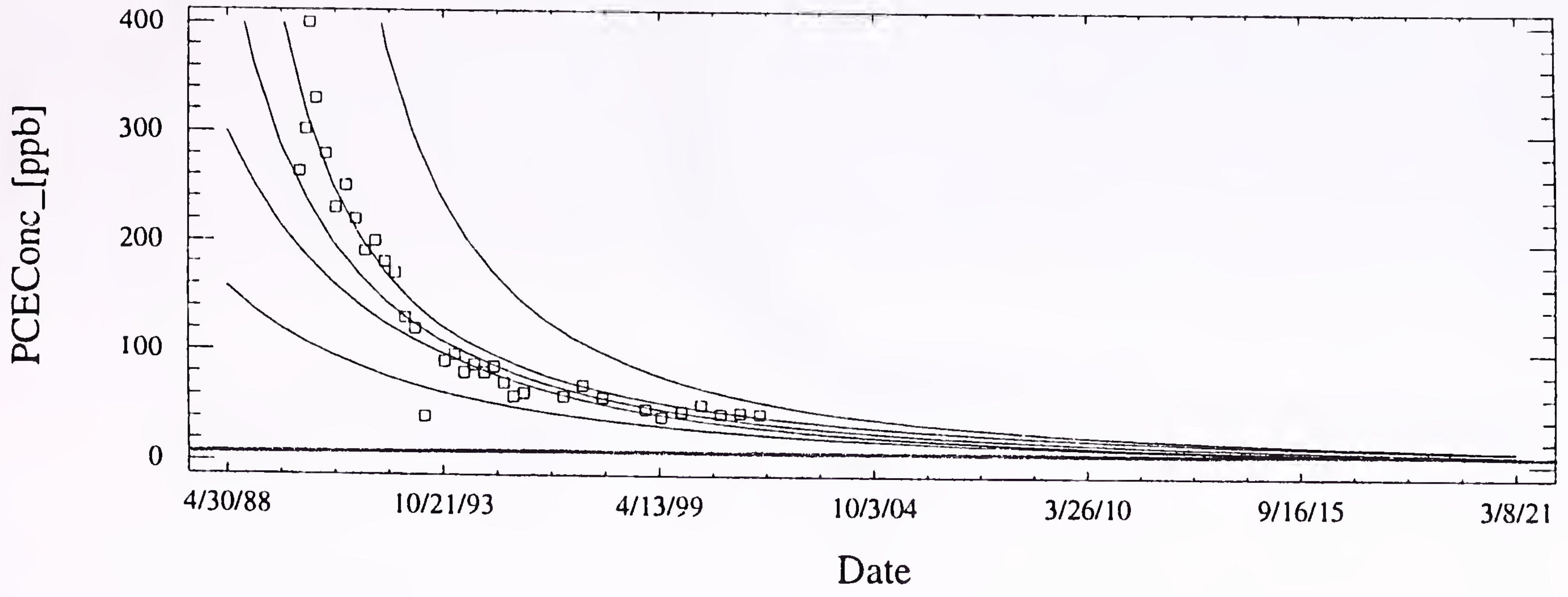
TETRACHLOROETHENE
CONCENTRATIONS
FOR WELL L-87-5

FIGURE 17.0

Power=-0.534375, Shift=0.0

Plot of Fitted Model

89-9 PCE



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -18.0 ppb/yr
ACTUAL DECLINE OBSERVED = 89%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2023

THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY

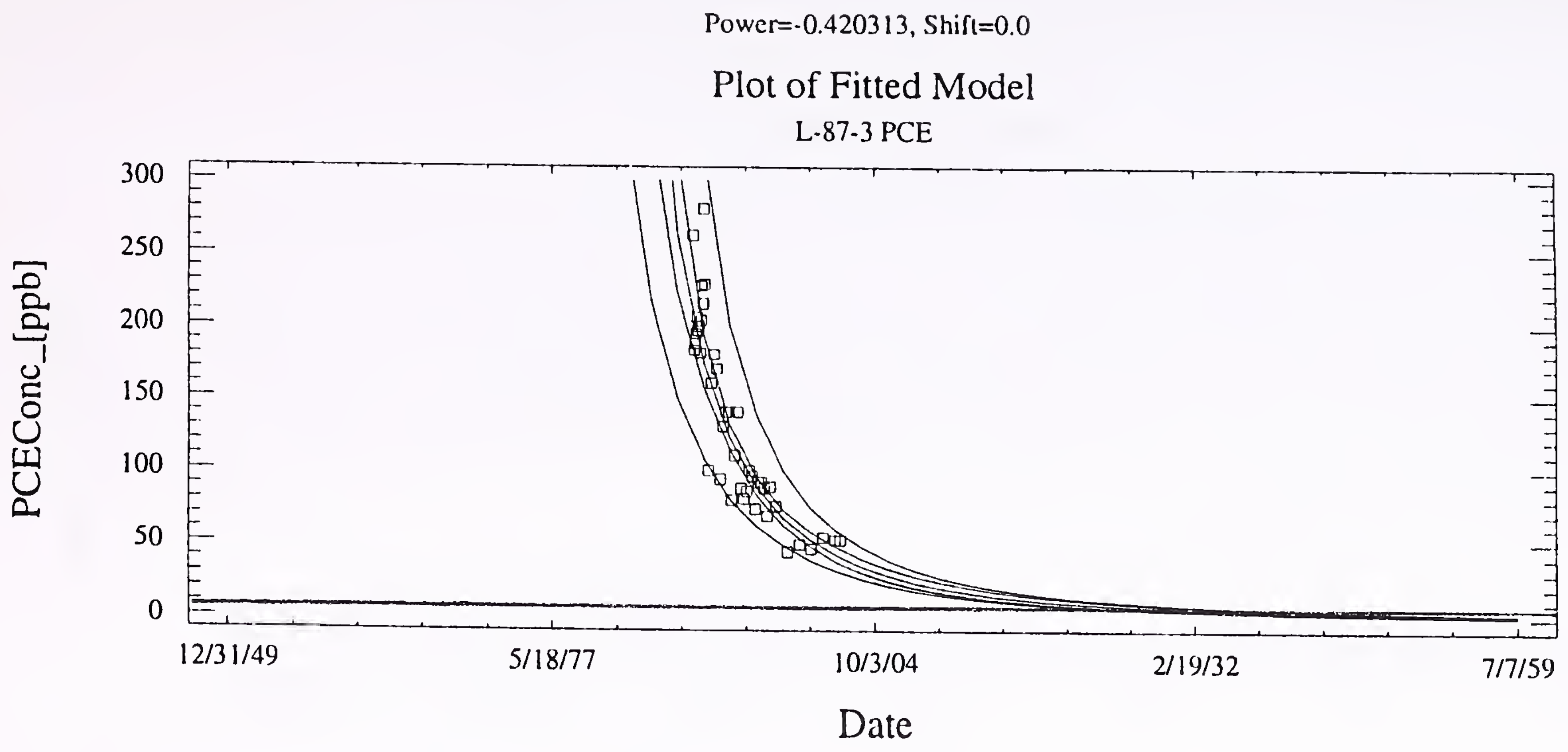
ENVIROCON, INC.

LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

AutoCad FILE: 89-9 PCE

TETRACHLOROETHENE
CONCENTRATIONS
FOR WELL 89-9

FIGURE 18.0



EXPONENTIAL REGRESSION LINE WITH
95% CONFIDENCE INTERVAL ENVELOPE
AVERAGE SLOPE OF MEAN IN ug/L/YEAR = -13.7 ppb/yr
ACTUAL DECLINE OBSERVED = 82%

Center curved line is the estimate of the mean concentration over time, statisically derived from the data collected to date.

Inner pair of lines surrounding the center curved line delineates the envelope containing the means of the data points at each point in time with a 95% degree of statistical confidence. I.E. the mean described above could vary anywhere within this inner envelope.

Outer pair of lines delineates the envelope containing the data universe with a 95% degree of statistical confidence.

ESTIMATED TIME FRAME FOR
COMPLIANCE WITH MCL LEVEL
~2038

THE BURLINGTON NORTHERN &
SANTA FE RAILWAY COMPANY

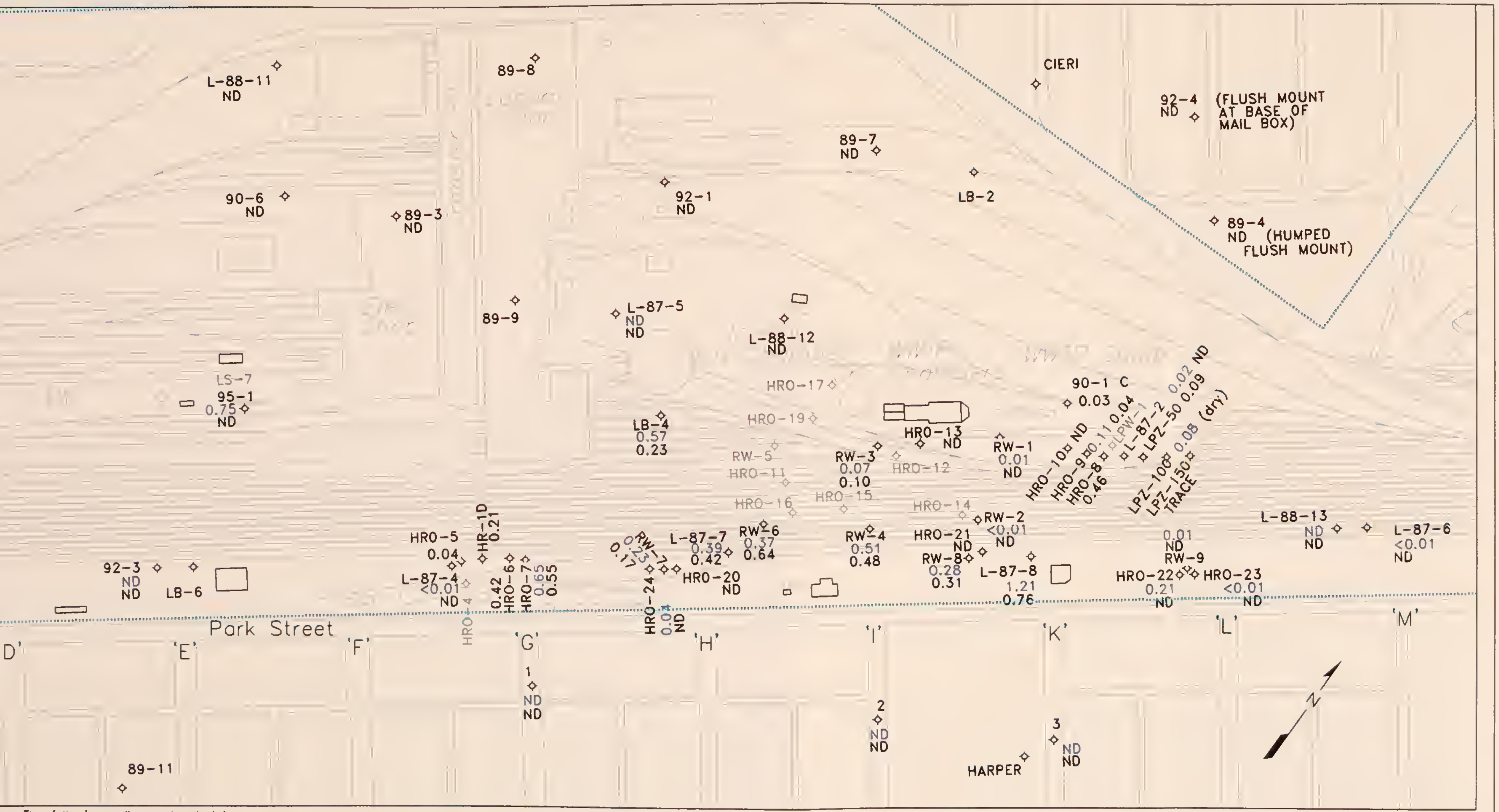
ENVIROCON, INC.

LIVINGSTON RAIL YARD
2001 ANNUAL
GROUNDWATER REPORT

AutoCad FILE: L-87-3 PCE

TETRACHLOROETHENE
CONCENTRATIONS
FOR WELL L-87-3

FIGURE 19.0



The following wells are located to the S.W., near the passenger depot

LS-6 <0.01 ND	L-88-9 <0.01 ND	LG-12 <0.01 ND
	LG-11 ND	

LEGEND

◇ L-88-13	WELL NUMBER
ND	MAY 2001
ND	DECEMBER 2001

0 200

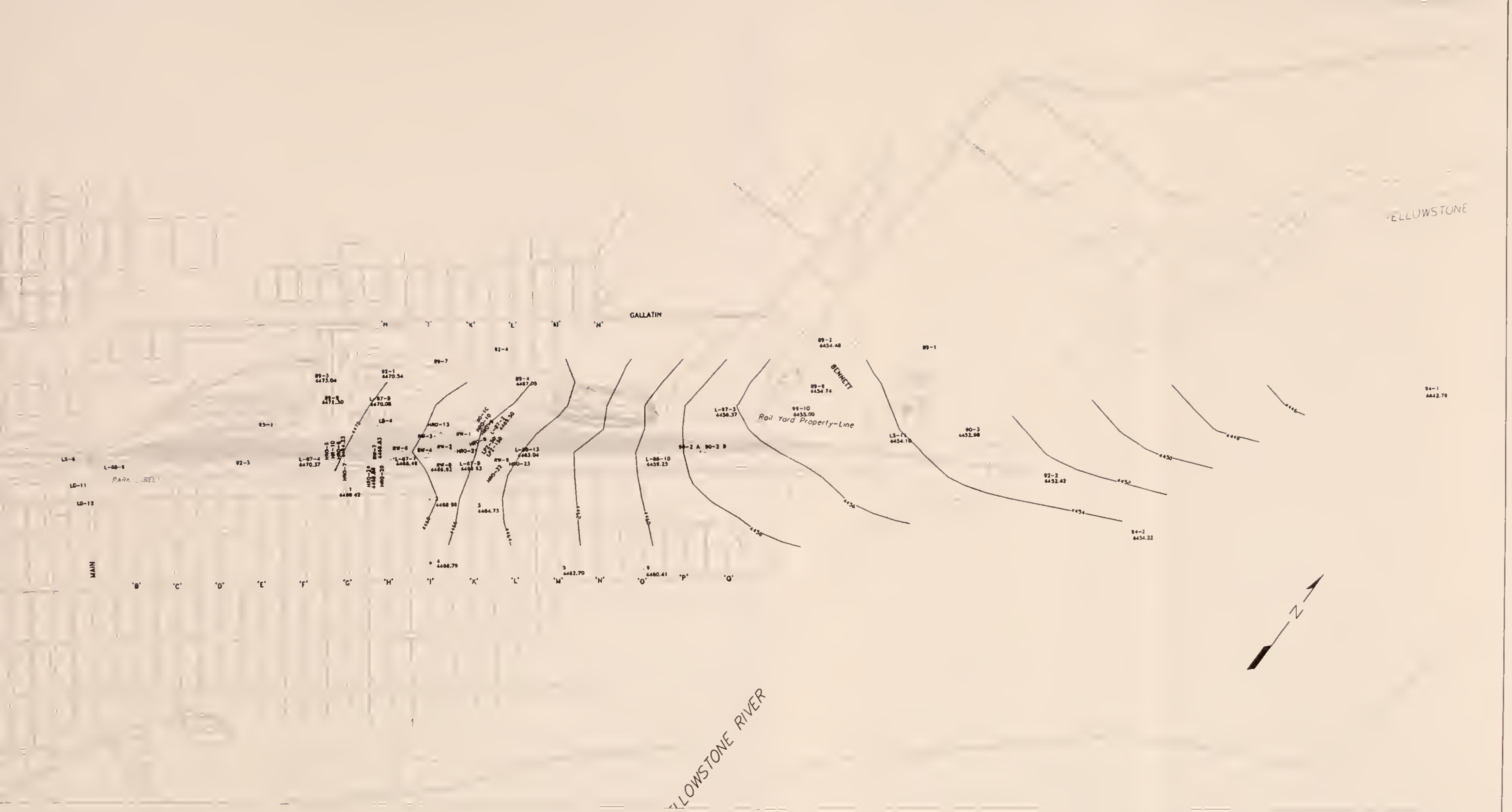
Scale: 1" = 200'

PREPARED FOR:
BNSF
Livingston

TITLE
Figure 21.0
Apparent Free Product
Thickness Measurements
(Feet) May & December 2001

PREPARED BY:
ENVIROCON
500 TAYLOR STREET
MISSOULA, MONTANA 59807

SCALE 1" = 200'
REVISION 1
DRAWING No.
140101-fig 21.0 free product plume
DRAWN BY: J. STONE
CHECKED BY: D. McCAFFERY
DATE 10/31/01



0 800

SCALE 1" = 800'

PREPARED FOR

BNSF
Livingston Rail Yard

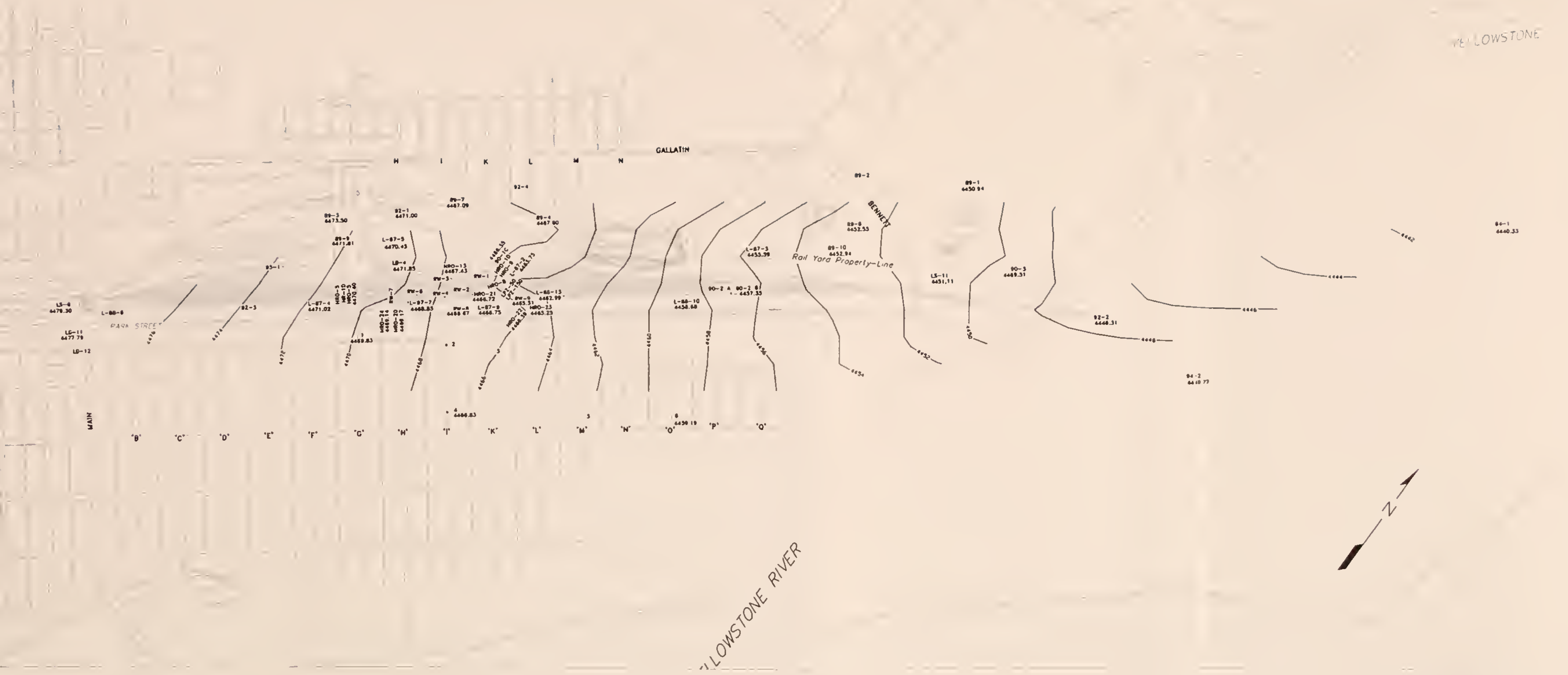
PREPARED BY

ENVIROCON
500 TAYLOR STREET
MISSOULA, MONTANA 59807

TITLE

Figure 22.0
Potentiometric
Ground Water Surface
May 2001

SCALE 1" = 800'		REVISION
DRAWING No. 140101-May Water Elevations	PAGE 1 of 1	
DRAWN BY J. Stone	CHECKED BY D McCaffery	DATE 02/13/02
		1



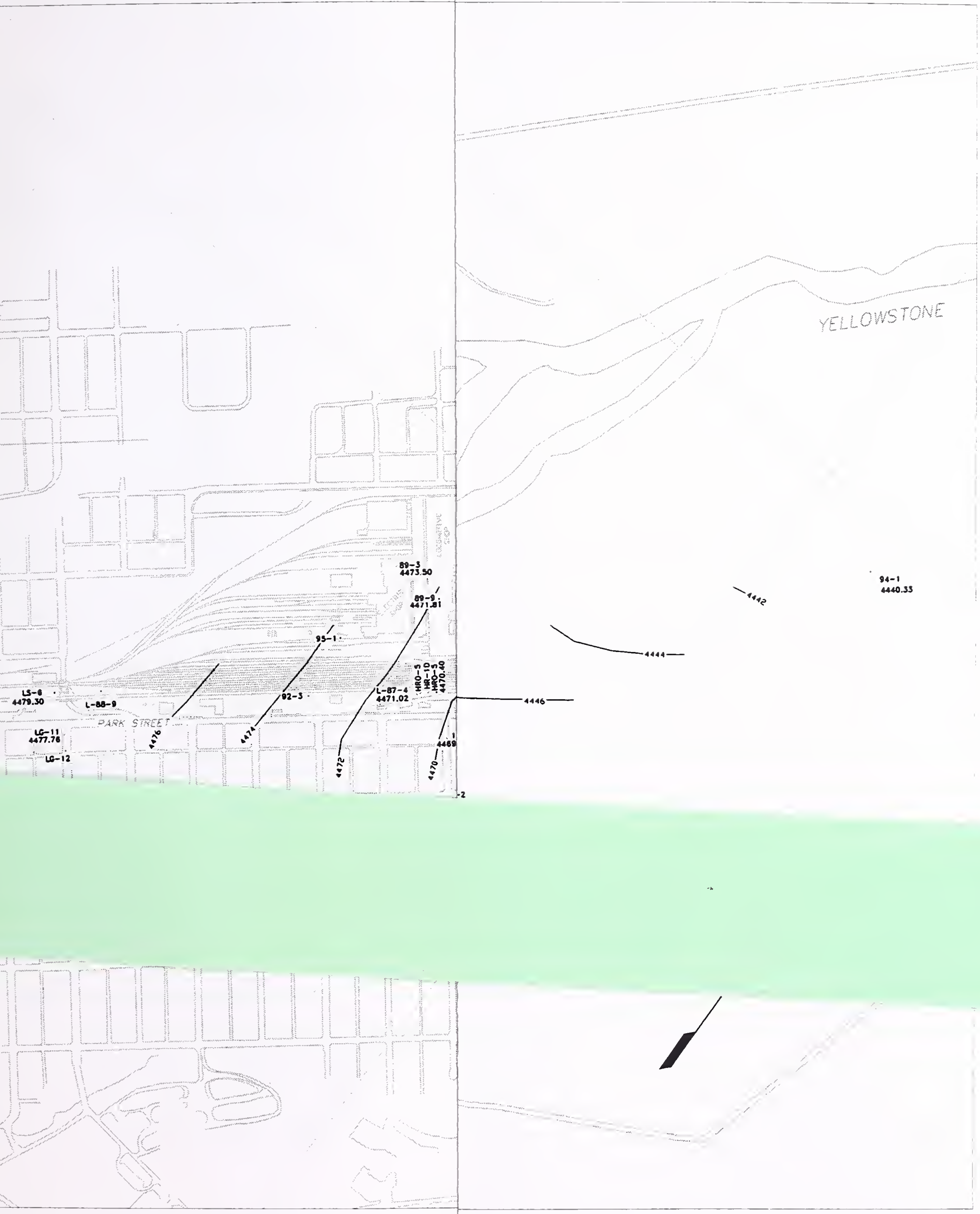
0 800

SCALE: 1" = 800'

PREPARED FOR BNSF Livingston Rail Yard	PREPARED BY ENVIROCON 500 TAYLOR STREET MISSOULA, MONTANA 59807

TITLE
Figure 230
Potentiometric
Ground Water Surface
December 2001

SCALE 1" = 800'			REVISION
DRAWING No. 140101-Dec Water Elevations		PAGE 1 of 1	
DRAWN BY J. Stone	CHECKED BY D. McCaffery	DATE 02/13/02	1



ARED FOR:

BNSF

ivingston Rail Yard

Figure 23.0
Potentiometric
round Water Surface
December 2001

PREPARED BY:

ENVIROCON
500 TAYLOR STREET
MISSOULA, MONTANA 59807

SCALE 1" = 800'

DRAWING No. 14D101-Dec Water Elevations

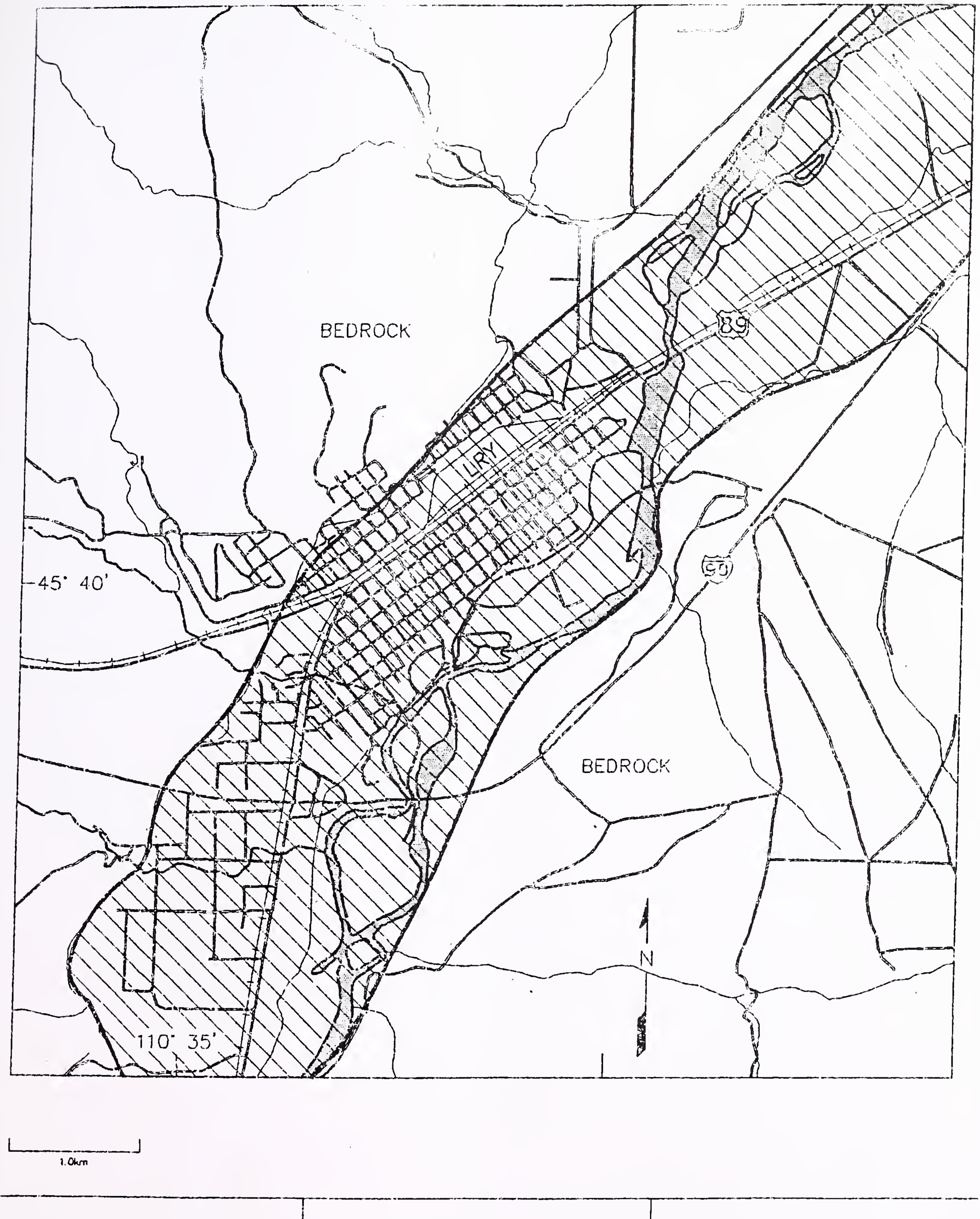
PAGE: 1 of 1

DRAWN BY: J. Stone

CHECKED BY: D. McCaffery

DATE: 02/13/02

REVISION 1



BURLINGTON NORTHERN

ENVIROCON, INC.

GROUND WATER SECTION
LIVINGSTON RAILYARD
REMEDIAL INVESTIGATION

APPROXIMATE AREA
OF
LIVINGSTON AQUIFER

AutoCAD FILE: GWRI-1.DWG_B

8/27/91

FIGURE 24.0

APPENDIX A

LABORATORY ANALYTICAL RESULTS

MAY 2001

BNSF GROUND WATER SAMPLE RESULTS

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1741 L-87-11
Project Info: BN/LIVINGSTON
Lab ID: 004-01-53846
Matrix: WATER; pH= < 2

Date Reported: 05/31/01
Date Sampled: 05/17/01 11:00
Date Received: 05/21/01
Date Analyzed: 05/29/01 12:51

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.11	91	74--127
Toluene d8	10	10	100	80--120
p-Bromofluorobenzene	10	9.77	98	80--120

REPORT COMMENTS: None

Analyst:__________ Reviewing Supervisor:__________ /chem/5971A.i/va052901.b/may290601006.d

ERGY
ORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

L-87-7

A12

Client:	**Envirocon, Inc.**	Date Reported:	05/31/01
Sample ID:	140101-1742	Date Sampled:	05/17/01 12:00
Project Info:	BN/LIVINGSTON	Date Received:	05/21/01
Lab ID:	005-01-53846	Date Analyzed:	05/29/01 13:52
Matrix:	WATER; pH= 4		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	**2-Chlorotoluene**	**(0.17)(J)**	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.32	93	74--127
Toluene d8	10	10	100	80--120
p-Bromofluorobenzene	10	9.77	98	80--120

REPORT COMMENTS: None

Analyst:_______ Reviewing Supervisor:_______ /chem/5971A.i/va052901.b/may290701007.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

A12

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1743 L-98-13
Project Info: BN/LIVINGSTON
Lab ID: 006-01-53846
Matrix: WATER; pH= < 2

Date Reported: 05/31/01
Date Sampled: 05/17/01 13:20
Date Received: 05/21/01
Date Analyzed: 05/29/01 14:32

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**(0.37)(J)**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**9.0**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.4**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.34	93	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.58	96	80--120

✓

REPORT COMMENTS: None

Analyst:__________ Reviewing Supervisor:__________ /chem/5971A.i/va052901.b/may290801008.d

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1744 L-87-8
Project Info: BN/LIVINGSTON
Lab ID: 007-01-53846
Matrix: WATER; pH= 4

Date Reported: 05/31/01
Date Sampled: 05/17/01 15:40
Date Received: 05/21/01
Date Analyzed: 05/29/01 15:07

Δ12

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**2.8**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**2.4**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**5.5**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.27	93	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.70	97	80--120

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va052901.b/may290901009.d

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported:	05/31/01
Sample ID:	140101-1745 L-88-10	Date Sampled:	05/17/01 16:20
Project Info:	BN/LIVINGSTON	Date Received:	05/21/01
Lab ID:	008-01-53846	Date Analyzed:	05/29/01 15:43
Matrix:	WATER; pH= 7		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	**Chlorobenzene**	**0.75**	0.50
95-50-1	**1,2-Dichlorobenzene**	**(0.32)(J)**	0.50
106-46-7	**1,4-Dichlorobenzene**	**0.53**	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**8.1**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**(0.21)(J)**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**22(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**7.2**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	**2-Chlorotoluene**	**(0.10)(J)**	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

	CONCENTRATION(μg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.28	93	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.57	96	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may291001010.d

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

A12

Client: **Envirocon, Inc.**
Sample ID: 140101-1746 1-88-10 duplicate
Project Info: BN/LIVINGSTON
Lab ID: 009-01-53846
Matrix: WATER; pH= 7

Date Reported: 05/31/01
Date Sampled: 05/17/01 16:30
Date Received: 05/21/01
Date Analyzed: 05/29/01 16:18

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	**Chlorobenzene**	**0.75**	0.50
95-50-1	**1,2-Dichlorobenzene**	**(0.34)(J)**	0.50
106-46-7	**1,4-Dichlorobenzene**	**0.51**	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**8.0**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**(0.21)(J)**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**22(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**7.0**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.
ND= Indicates compound was analyzed for but not detected.
D= Value was derived from a 10 times dilution.
J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.27	93	74--127
Toluene d8	10	9.86	99	80--120
p-Bromofluorobenzene	10	9.40	94	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va052901.b/may291101011.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1747 Trip blank
Project Info: BN/LIVINGSTON
Lab ID: 010-01-53846
Matrix: WATER; pH= < 2

Date Reported: 05/31/01
Date Sampled: 05/17/01 16:30
Date Received: 05/21/01
Date Analyzed: 05/29/01 16:54

Δ1

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	**Bromodichloromethane**	**3.7**	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	**Chlorodibromomethane**	**1.2**	0.50
67-66-3	**Chloroform**	**9.9**	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.30	93	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.51	95	80--120

/

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may291201012.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.** L-87-3
Sample ID: 140101-1748
Project Info: BN/LIVINGSTON
Lab ID: 011-01-53846
Matrix: WATER; pH= 7

Date Reported: 05/31/01
Date Sampled: 05/18/01 09:30
Date Received: 05/21/01
Date Analyzed: 05/29/01 17:31

Δ11

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**5.2**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**(0.38)(J)**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**52(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**4.8**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.42	94	74--127
Toluene d8	10	9.97	100	80--120
p-Bromofluorobenzene	10	9.51	95	80--120

REPORT COMMENTS: None

Analyst:__________ Reviewing Supervisor:__________ /chem/5971A.i/va052901.b/may291301013.d

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client:	**Envirocon, Inc.** 59-2	Date Reported:	05/31/01
Sample ID:	140101-1749	Date Sampled:	05/18/01 10:05
Project Info:	BN/LIVINGSTON	Date Received:	05/21/01
Lab ID:	012-01-53846	Date Analyzed:	05/29/01 18:06
Matrix:	WATER; pH= < 2		

A11

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.42	94	74--127
Toluene d8	10	10.1	101	80--120 ✓
p-Bromofluorobenzene	10	9.58	96	80--120

REPORT COMMENTS: None

Analyst:__________ Reviewing Supervisor:__________ /chem/5971A.i/va052901.b/may291401014.d

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

A11

EPA METHOD 624

Client:	**Envirocon, Inc.**		Date Reported:	05/31/01
Sample ID:	140101-1750	94-2	Date Sampled:	05/18/01 11:55
Project Info:	BN/LIVINGSTON		Date Received:	05/21/01
Lab ID:	013-01-53846		Date Analyzed:	05/29/01 18:41
Matrix:	WATER; pH= 4			

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**(0.25)(J)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.42	94	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.47	95	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va052901.b/may291501015.d

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.** Rainbow Motel
Sample ID: 140101-1751
Project Info: BN/LIVINGSTON
Lab ID: 014-01-53846
Matrix: WATER; pH= < 2

Date Reported: 05/31/01
Date Sampled: 05/18/01 12:55
Date Received: 05/21/01
Date Analyzed: 05/29/01 19:16

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**(0.50)(J)**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**4.7**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**0.87**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

	CONCENTRATION(μg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.26	93	74--127
Toluene d8	10	9.96	100	80--120
p-Bromofluorobenzene	10	9.56	96	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may291601016.d

ENERGY LABORATORIES 800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported:	05/31/01
Sample ID:	140101-1752 LS-11	Date Sampled:	05/18/01 13:20
Project Info:	BN/LIVINGSTON	Date Received:	05/21/01
Lab ID:	015-01-53846	Date Analyzed:	05/29/01 19:51
Matrix:	WATER; pH= 7		

A11

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	**Chlorobenzene**	**1.6**	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	**1,4-Dichlorobenzene**	**2.8**	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**3.6**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**20(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**4.3**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	**1,3-Dichlorobenzene**	**(0.27)(J)**	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.27	93	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.56	96	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may291701017.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.** 96-3
Sample ID: 140101-1753
Project Info: BN/LIVINGSTON
Lab ID: 016-01-53846
Matrix: WATER; pH= 7

Date Reported: 05/31/01
Date Sampled: 05/18/01 13:50
Date Received: 05/21/01
Date Analyzed: 05/29/01 20:26

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**(0.22)(J)**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**18**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**0.96**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.50	95	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.56	96	80--120

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va052901.b/may291801018.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

A11

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1754 92-2
Project Info: BN/LIVINGSTON
Lab ID: 017-01-53846
Matrix: WATER; pH= < 2

Date Reported: 05/31/01
Date Sampled: 05/18/01 14:30
Date Received: 05/21/01
Date Analyzed: 05/29/01 21:02

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**5.0**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**(0.38)(J)**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.52	95	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.32	93	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may291901019.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1755 9H-1
Project Info: BN/LIVINGSTON
Lab ID: 018-01-53846
Matrix: WATER; pH= < 2

Date Reported: 05/31/01
Date Sampled: 05/18/01 16:30
Date Received: 05/21/01
Date Analyzed: 05/30/01 01:40

Δ12

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**1.2**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.50	95	74--127
Toluene d8	10	10.1	101	80--120 ✓
p-Bromofluorobenzene	10	9.69	97	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may292701027.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 05/31/01
Date Analyzed: 05/29/01 12:15

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION ($\mu g/L$)*	*LIMIT OF QUANTITATION($\mu g/L$)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.75	98	74--127
Toluene d8	10	9.90	99	80--120
p-Bromofluorobenzene	10	9.40	94	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may290501005.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 05/31/01
Date Analyzed: 05/30/01 01:06

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.53	95	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.63	96	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va052901.b/may292601026a.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: REFERENCE STANDARD BLANK MATRIX SPIKE

Sample ID:	Quality Assurance Blank Matrix Spike	Date Reported:	05/31/01
Matrix:	WATER	Date Analyzed:	05/29/01 11:04
Extract Method:	EPA 5030		

SPIKE COMPOUNDS	*CONCENTRATION(µg/L)* *ADDED*	*MEASURED*	*PERCENT RECOVERY*	*ACCEPTANCE RANGE*
Carbon tetrachloride	5.00	4.62	92	70--140
Chlorobenzene	5.00	4.68	94	37--160
1,2-Dichlorobenzene	5.00	4.28	86	18--190
1,4-Dichlorobenzene	5.00	4.65	93	18--190
1,2-Dichloroethane	5.00	4.66	93	49--155
1,1-Dichloroethene	5.00	3.71	74	10--134
cis-1,2-Dichloroethene	5.00	4.60	92	60--140
trans-1,2-Dichloroethene	5.00	4.45	89	54--156
1,2-Dichloropropane	5.00	4.16	83	10--210
Methylene chloride	5.00	4.41	88	10--221
Tetrachloroethene	5.00	4.76	95	64--148
1,1,1-Trichloroethane	5.00	4.47	89	52--162
1,1,2-Trichloroethane	5.00	4.90	98	52--150
Trichloroethene	5.00	4.84	97	71--157
Vinyl chloride	5.00	4.40	88	60--251
2-Chloroethylvinyl ether	5.00	4.14	83	10--305
Bromodichloromethane	6.20	4.56	74	35--140
Bromoform	5.00	4.58	92	45--169
Chlorodibromomethane	5.00	4.79	96	53--149
Chloroform	5.00	4.53	91	51--138
Bromomethane	5.00	4.92	98	10--242
Chloroethane	5.00	4.70	94	14--230
Chloromethane	5.00	4.10	82	10--273
2-Chlorotoluene	5.00	4.51	90	60--140
1,3-Dichlorobenzene	5.00	4.76	95	59--156
Dichlorodifluoromethane	5.00	4.76	95	60--140
1,1-Dichloroethane	5.00	3.95	79	59--155
cis-1,3-Dichloropropene	5.00	4.69	94	10--227
trans-1,3-Dichloropropene	5.00	4.82	96	17--183
1,1,2,2-Tetrachloroethane	5.00	4.50	90	46--157
Trichlorofluoromethane	5.00	4.64	93	17--181

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.96	100	74--127
Toluene d8	10	9.89	99	80--120
p-Bromofluorobenzene	10	9.13	91	80--120

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va052901.b/may290301003.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: SAMPLE MATRIX SPIKES

Laboratory ID: 006-01-53846ms Matrix Spike

L-58-13

Matrix: WATER

Extract Method: EPA 5030

Date Reported: 05/31/01

Date Analyzed: 05/30/01 18:26

	---------CONCENTRATION(µg/L)-----------			PERCENT	ACCEPTANCE
SPIKE COMPOUNDS	ADDED	SAMPLE	SPIKE	RECOVERY	RANGE
Carbon tetrachloride	5.00	<0.500	4.42	88	70--140
Chlorobenzene	5.00	<0.500	4.84	97	37--160
1,2-Dichlorobenzene	5.00	<0.500	4.98	100	18--190
1,4-Dichlorobenzene	5.00	<0.500	4.84	97	18--190
1,2-Dichloroethane	5.00	<0.500	4.54	91	49--155
1,1-Dichloroethene	5.00	<0.500	4.29	86	10--134
cis-1,2-Dichloroethene	5.00	<0.500	5.42	108	60--140
trans-1,2-Dichloroethene	5.00	<0.500	5.02	100	54--156
1,2-Dichloropropane	5.00	<0.500	4.05	81	10--210
Methylene chloride	5.00	<0.500	4.75	95	10--221
Tetrachloroethene	5.00	9.00	14.1	102	64--148
1,1,1-Trichloroethane	5.00	<0.500	4.64	93	52--162
1,1,2-Trichloroethane	5.00	<0.500	5.11	102	52--150
Trichloroethene	5.00	1.40	6.07	93	71--157
Vinyl chloride	5.00	<0.500	3.88	78	60--251
2-Chloroethylvinyl ether	5.00	<0.500	<0.500	0*	10--305
Bromodichloromethane	5.00	<0.500	4.61	92	35--140
Bromoform	5.00	<0.500	4.58	92	45--169
Chlorodibromomethane	5.00	<0.500	4.67	93	53--149
Chloroform	5.00	<0.500	4.43	89	51--138
Bromomethane	5.00	<0.500	4.63	93	10--242
Chloroethane	5.00	<0.500	4.24	85	14--230
Chloromethane	5.00	<0.500	3.88	78	10--273
2-Chlorotoluene	5.00	<0.500	5.00	100	60--140
1,3-Dichlorobenzene	5.00	<0.500	4.77	95	59--156
Dichlorodifluoromethane	5.00	<0.500	4.25	85	60--140
1,1-Dichloroethane	5.00	<0.500	4.25	85	59--155
cis-1,3-Dichloropropene	5.00	<0.500	4.76	95	10--227
trans-1,3-Dichloropropene	5.00	<0.500	4.77	95	17--183
1,1,2,2-Tetrachloroethane	5.00	<0.500	5.02	100	46--157
Trichlorofluoromethane	5.00	<0.500	4.21	84	17--181

*= Spike recovery is outside recommended QC limits.

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.45	94	74--127
Toluene d8	10	10.6	106	80--120 ✓
p-Bromofluorobenzene	10	9.71	97	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may301701017.d

ENERGY LABORATORIES, INC
P.O. Box 30916 1120 South 27th Street
Billings, Montana 59107

toll-free 800-735-4489
voice 406-252-6325
fax 406-252-6069

CHAIN OF CUSTODY RECORD

PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES

6°C

P.O. # —

Project Name / Address: BN/Livingston

Contact Name & Phone: 523-1186 Dan McCaffery

Sampler's signature: Dan McCaffery

Invoice to: ✓ Attn: Dan McCaffery
Envirocon, PO Box 16655
Missoula, MT 59808

Report to: (same)

DATE	TIME	composite	grab sample	SAMPLE I.D.	number of containers	Sample Type: A W S V U O Air Water Soils/solids Vegetation Urine Other	Analysis Requested: 601 VOC's short list	Comments, Special Instructions, etc.
5/7/01	1100			140101-1741			X	004-01-53846
	12:00			-1742				005
	1:20			-1743				006
	3:40			-1744				007
	4:20			-1745				008
	4:30			-1746				009

1. Relinquished (signature): Dan McCaffery Date: 5/20/01 Time: 4:30 Received by: (signature)

2. Relinquished (signature) Date Time Received by: (signature)

3. Relinquished (signature) Date Time Received by (signature):

4. Relinquished (signature) Date: 05/21/01 Time: 1600 Received for laboratory by (signature):

E1023111

ENERGY LABORATORIES, INC
P.O. Box 30916 1120 South 27th Street
Billings, Montana 59107

toll-free 800-735-4489
voice 406-252-6325
fax 406-252-6069

CHAIN OF CUSTODY RECORD

Greyhound
LC

PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES

P.O. # —

Project Name / Address: BN/Livingston

Contact Name & Phone: Dan McCaffery 523-1186

Sampler's signature: Dan McCaffery

Invoice to: Attn: Dan McCaffery
Envirocon, PO Box 16655
Missoula, MT, 59808

Report to: (same)

Analysis Requested: 601 (Short List VOCs)

DATE	TIME	composite	grab sample	SAMPLE I.D.	number of containers	Sample Type: A W S V U O Air Water Soils/solids Vegetation Urine Other	601 (Short List VOCs)							Comments, Special Instructions, etc.
5/17/01	4³⁰		X	140101 - 1747	2 (A+B)		X			010-01-53546				note - analyze
5/18/01	9³⁰			- 1748						011				only 1
	10⁰⁵			- 1749						012				i.e. - either
	11⁵⁵			- 1750						013				A or B,
	12⁵⁵			- 1751						014				not both!
	1²⁰			- 1752						015				
	1⁵⁰			- 1753						016				
	2³⁰			- 1754						017				
	4³⁰			- 1755						018				

1. Relinquished (signature) Dan McCaffery	Date 5/20/01	Time 4³⁰	Received by: (signature)	3. Relinquished (signature)	Date	Time	Received by (signature):
2. Relinquished (signature)	Date	Time	Received by: (signature)	4. Relinquished (signature)	Date 05/21/01	Time 1600	Received for laboratory by (signature): Krystal Williams

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

Lab Nos.: 001-01-53846 - 018-01-53846

Date: 21-MAY-01

Received by: Krystal McDonald

Logged In by: Krystal McDonald

SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

Chain of Custody Form Completed & Signed	Yes	Comments:
Chain of Custody Seal	No	Comments:
Intact	N/A	Comments:
Signature Match Chain of Custody vs. Seal	N/A	Comments:
Temperature Received	6 C.	Comments:
Samples Received Within Holding Time	Yes	Comments:
Samples Received in Proper Containers	Yes	Comments:
Samples Received Properly Preserved(1)	N/A	Comments:

(1)Acid preservation of samples for volatile organics is not evaluated on this form. Any preservation problems encountered for these samples are noted on the analytical parameter report pages.

Record of client contact:

Who: By: Date/Time:

Method of Shipping: Greyhound

Additional comments:

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

file
14010

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1756
Project Info: BN/LIVINGSTON
Lab ID: 001-01-53992
Matrix: WATER; pH= 4

Date Reported: 06/01/01
Date Sampled: 05/21/01 14:35
Date Received: 05/25/01
Date Analyzed: 05/30/01 23:46

Δ9

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	**Chlorobenzene**	**14**	0.50
95-50-1	**1,2-Dichlorobenzene**	**1.3**	0.50
106-46-7	**1,4-Dichlorobenzene**	**2.6**	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**11**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**0.91**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**11**	0.50
75-01-4	**Vinyl chloride**	**6.2**	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	**2-Chlorotoluene**	**34(D)**	5.0
541-73-1	**1,3-Dichlorobenzene**	**(0.40)(J)**	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.03	90	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.40	94	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may302601026 d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1757 89-H
Project Info: BN/LIVINGSTON
Lab ID: 002-01-53992
Matrix: WATER; pH= < 2

Date Reported: 06/01/01
Date Sampled: 05/21/01 15:40
Date Received: 05/25/01
Date Analyzed: 05/31/01 00:21

Δ9

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.2**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**86(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.2**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.14	91	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.44	94	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va053001.b/may302701027.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1758 99-H duplicate
Project Info: BN/LIVINGSTON
Lab ID: 003-01-53992
Matrix: WATER; pH= < 2

Date Reported: 06/01/01
Date Sampled: 05/21/01 15:45
Date Received: 05/25/01
Date Analyzed: 05/31/01 00:57

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.2**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**89(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.1**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.
D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.02	90	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.90	99	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va053001.b/may302801028.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1759 42-4
Project Info: BN/LIVINGSTON
Lab ID: 004-01-53992
Matrix: WATER; pH= < 2

Date Reported: 06/01/01
Date Sampled: 05/21/01 16:38
Date Received: 05/25/01
Date Analyzed: 05/31/01 01:33

Δ10

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**(0.36)(J)**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**35(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.2**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.
D= Value was derived from a 10 times dilution.
J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	8.94	89	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.67	97	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may302901029.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1760 MW 1
Project Info: BN/LIVINGSTON
Lab ID: 005-01-53992
Matrix: WATER; pH= < 2

Date Reported: 06/01/01
Date Sampled: 05/21/01 17:20
Date Received: 05/25/01
Date Analyzed: 05/31/01 02:07

Δ10

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

	CONCENTRATION(μg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.12	91	74--127
Toluene d8	10	10.3	103	80--120
p-Bromofluorobenzene	10	9.58	96	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may303001030.d

EPA METHOD 624

A10

Client: **Envirocon, Inc.**
Sample ID: 140101-1761 MW2
Project Info: BN/LIVINGSTON
Lab ID: 006-01-53992
Matrix: WATER; pH= < 2

Date Reported: 06/01/01
Date Sampled: 05/21/01 17:50
Date Received: 05/25/01
Date Analyzed: 05/31/01 02:43

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	**Bromodichloromethane**	**0.87**	0.50
75-25-2	**Bromoform**	**0.80**	0.50
124-48-1	**Chlorodibromomethane**	**1.2**	0.50
67-66-3	**Chloroform**	**1.1**	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.08	91	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.75	98	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va053001.b/may303101031 d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1762 MW-4
Project Info: BN/LIVINGSTON
Lab ID: 007-01-53992
Matrix: WATER; pH= < 2

Date Reported: 06/01/01
Date Sampled: 05/22/01 11:00
Date Received: 05/25/01
Date Analyzed: 05/31/01 03:18

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	1.0
110-75-8	2-Chloroethylvinyl ether	ND	0.50
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.05	90	74--127
Toluene d8	10	10.3	103	80--120
p-Bromofluorobenzene	10	9.60	96	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may303201032.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1763 MW-3
Project Info: BN/LIVINGSTON
Lab ID: 008-01-53992
Matrix: WATER; pH= 3

Date Reported: 06/01/01
Date Sampled: 05/22/01 12:15
Date Received: 05/25/01
Date Analyzed: 05/31/01 03:53

Δ9

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 3.
ND= indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.11	91	74--127
Toluene d8	10	10.3	103	80--120
p-Bromofluorobenzene	10	9.31	93	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may303301033.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1764 MW-5
Project Info: BN/LIVINGSTON
Lab ID: 009-01-53992
Matrix: WATER; pH= 7

Date Reported: 06/01/01
Date Sampled: 5/22/01
Date Received: 5/25/01
Date Analyzed: 05/31/01 04:28

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.
ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.13	91	74--127
Toluene d8	10	10.6	106	80--120
p-Bromofluorobenzene	10	9.68	97	80--120

REPORT COMMENTS: None

Analyst: ____ Reviewing Supervisor: ____ /chem/5971A.i/va053001.b/may303401034.d

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported:	06/01/01
Sample ID:	140101-1765 59-6	Date Sampled:	05/22/01 15:10
Project Info:	BN/LIVINGSTON	Date Received:	05/25/01
Lab ID:	010-01-53992	Date Analyzed:	05/31/01 05:03
Matrix:	WATER; pH= 7		

A9

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**8.3**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.49	95	74--127
Toluene d8	10	10.4	104	80--120
p-Bromofluorobenzene	10	9.56	96	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may303501035.d

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported:	06/01/01
Sample ID:	140101-1766 Trip Blank	Date Sampled:	05/22/01 14:35
Project Info:	BN/LIVINGSTON	Date Received:	05/25/01
Lab ID:	011-01-53992	Date Analyzed:	05/31/01 05:38
Matrix:	WATER; pH= < 2		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	**Bromodichloromethane**	**3.3**	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	**Chlorodibromomethane**	**1.1**	0.50
67-66-3	**Chloroform**	**8.5**	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.32	93	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.56	96	80--120

REPORT COMMENTS: None

Analyst:_______ Reviewing Supervisor:_______ /chem/5971A.i/va053001.b/may303601036.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1767 89-10
Project Info: BN/LIVINGSTON
Lab ID: 012-01-53992
Matrix: WATER; pH= 4

Date Reported: 06/01/01
Date Sampled: 05/22/01 15:50
Date Received: 05/25/01
Date Analyzed: 05/31/01 06:13

Δ9

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**2.9**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**(0.20)(J)**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**38(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**3.1**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.
ND= indicates compound was analyzed for but not detected.
D= Value was derived from a 10 times dilution.
J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.06	91	74--127
Toluene d8	10	9.98	100	80--120
p-Bromofluorobenzene	10	9.86	99	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A i/va053001.b/may303701037.d

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported:	06/01/01
Sample ID:	140101-1768 MW-6	Date Sampled:	05/22/01 16:31
Project Info:	BN/LIVINGSTON	Date Received:	05/25/01
Lab ID:	013-01-53992	Date Analyzed:	05/31/01 06:47
Matrix:	WATER; pH= 4		

Δ9

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.13	91	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.75	98	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may303801038.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1769 89-9
Project Info: BN/LIVINGSTON
Lab ID: 014-01-53992
Matrix: WATER; pH= 7

Date Reported: 06/01/01
Date Sampled: 05/23/01 09:50
Date Received: 05/25/01
Date Analyzed: 05/31/01 07:22

A8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION (µg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**(0.45)(J)**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**45(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.2**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.26	93	74--127
Toluene d8	10	9.95	99	80--120
p-Bromofluorobenzene	10	9.70	97	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may303901039.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1770 89-3
Project Info: BN/LIVINGSTON
Lab ID: 015-01-53992
Matrix: WATER; pH= < 2

Date Reported: 06/01/01
Date Sampled: 05/23/01 11:30
Date Received: 05/25/01
Date Analyzed: 05/31/01 12:57

A8

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**0.61**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**135(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.8**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	8.93	89	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.97	100	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053101.b/may310601006.d

A8

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1771 92-1
Project info: BN/LIVINGSTON
Lab ID: 016-01-53992
Matrix: WATER; pH= 4

Date Reported: 06/01/01
Date Sampled: 05/23/01 13:50
Date Received: 05/25/01
Date Analyzed: 05/31/01 14:05

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION ($\mu g/L$)*	*LIMIT OF QUANTITATION($\mu g/L$)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.6**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**75(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.
ND= Indicates compound was analyzed for but not detected.
D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	8.86	89	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.80	98	80--120

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va053101.b/may310701007.d

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported:	06/01/01
Sample ID:	140101-1772 92-1 duplicate	Date Sampled:	05/23/01 13:55
Project Info:	BN/LIVINGSTON	Date Received:	05/25/01
Lab ID:	017-01-53992	Date Analyzed:	05/31/01 14:41
Matrix:	WATER; pH= 7		

Δ8

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION ($\mu g/L$)*	*LIMIT OF QUANTITATION($\mu g/L$)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.6**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**73(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 7.

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION($\mu g/L$) ADDED	CONCENTRATION($\mu g/L$) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.05	90	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.75	98	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053101.b/may310801008.d

EPA METHOD 624

A8

Client: **Envirocon, Inc.**
Sample ID: 140101-1774 L-87-5
Project Info: BN/LIVINGSTON
Lab ID: 018-01-53992
Matrix: WATER; pH= 4

Date Reported: 06/01/01
Date Sampled: 05/23/01 15:45
Date Received: 05/25/01
Date Analyzed: 05/31/01 15:17

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**0.50**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**34(D)**	5.0
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.1**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

Note: The sample was not properly acidified to a pH <2. The sample pH as received was 4.
ND= Indicates compound was analyzed for but not detected.
D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.14	91	74--127
Toluene d8	10	10.3	103	80--120
p-Bromofluorobenzene	10	9.59	96	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va053101.b/may310901009.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 06/01/01
Date Analyzed: 05/30/01 23:12

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION ($\mu g/L$)*	*LIMIT OF QUANTITATION($\mu g/L$)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.29	93	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.48	95	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may302501025.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: METHOD BLANK

Sample ID:	Quality Assurance Method Blank	Date Reported:	06/01/01
Matrix:	WATER	Date Analyzed:	05/31/01 12:21
Extract Method:	EPA 5030		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

✓

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.20	92	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.75	98	80--120

✓

REPORT COMMENTS: None

Analyst:__________ Reviewing Supervisor:__________ /chem/5971A.i/va053101.b/may310501005.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: REFERENCE STANDARD BLANK MATRIX SPIKE

Sample ID: Quality Assurance Blank Matrix Spike
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 06/01/01
Date Analyzed: 05/30/01 22:00

	CONCENTRATION(µg/L)		*PERCENT*	*ACCEPTANCE*
SPIKE COMPOUNDS	*ADDED*	*MEASURED*	*RECOVERY*	*RANGE*
Carbon tetrachloride	5.00	4.41	88	70--140
Chlorobenzene	5.00	4.74	95	37--160
1,2-Dichlorobenzene	5.00	4.94	99	18--190
1,4-Dichlorobenzene	5.00	4.70	94	18--190
1,2-Dichloroethane	5.00	4.50	90	49--155
1,1-Dichloroethene	5.00	4.42	88	10--134
cis-1,2-Dichloroethene	5.00	4.92	98	60--140
trans-1,2-Dichloroethene	5.00	5.06	101	54--156
1,2-Dichloropropane	5.00	4.11	82	10--210
Methylene chloride	5.00	4.81	96	10--221
Tetrachloroethene	5.00	4.66	93	64--148
1,1,1-Trichloroethane	5.00	4.24	85	52--162
1,1,2-Trichloroethane	5.00	5.00	100	52--150
Trichloroethene	5.00	4.68	94	71--157
Vinyl chloride	5.00	4.25	85	60--251
2-Chloroethylvinyl ether	5.00	4.26	85	10--305
Bromodichloromethane	6.20	4.60	74	35--140
Bromoform	5.00	4.59	92	45--169
Chlorodibromomethane	5.00	4.54	91	53--149
Chloroform	5.00	4.56	91	51--138
Bromomethane	5.00	5.02	100	10--242
Chloroethane	5.00	4.51	90	14--230
Chloromethane	5.00	3.99	80	10--273
2-Chlorotoluene	5.00	5.09	102	60--140
1,3-Dichlorobenzene	5.00	4.78	96	59--156
Dichlorodifluoromethane	5.00	4.61	92	60--140
1,1-Dichloroethane	5.00	4.27	85	59--155
cis-1,3-Dichloropropene	5.00	4.62	92	10--227
trans-1,3-Dichloropropene	5.00	4.61	92	17--183
1,1,2,2-Tetrachloroethane	5.00	5.05	101	46--157
Trichlorofluoromethane	5.00	4.15	83	17--181

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.49	95	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.71	97	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053001.b/may302301023.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: SAMPLE MATRIX SPIKES

Laboratory ID: 010-01-53992ms Matrix Spike
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 06/01/01
Date Analyzed: 06/01/01 02:21

	---------CONCENTRATION(µg/L)-----------				
SPIKE COMPOUNDS	*ADDED*	*SAMPLE*	*SPIKE*	*PERCENT RECOVERY*	*ACCEPTANCE RANGE*
Carbon tetrachloride	5.00	<0.500	4.13	83	70--140
Chlorobenzene	5.00	<0.500	4.70	94	37--160
1,2-Dichlorobenzene	5.00	<0.500	4.80	96	18--190
1,4-Dichlorobenzene	5.00	<0.500	4.58	92	18--190
1,2-Dichloroethane	5.00	<0.500	4.27	85	49--155
1,1-Dichloroethene	5.00	<0.500	4.18	84	10--134
cis-1,2-Dichloroethene	5.00	<0.500	4.83	97	60--140
trans-1,2-Dichloroethene	5.00	<0.500	5.00	100	54--156
1,2-Dichloropropane	5.00	<0.500	3.97	79	10--210
Methylene chloride	5.00	<0.500	4.63	93	10--221
Tetrachloroethene	5.00	8.30	12.8	90	64--148
1,1,1-Trichloroethane	5.00	<0.500	4.51	90	52--162
1,1,2-Trichloroethane	5.00	<0.500	5.18	104	52--150
Trichloroethene	5.00	<0.500	4.64	93	71--157
Vinyl chloride	5.00	<0.500	3.88	78	60--251
2-Chloroethylvinyl ether	5.00	<1.00	2.85	57	10--305
Bromodichloromethane	6.20	<0.500	4.62	75	35--140
Bromoform	5.00	<0.500	4.50	90	45--169
Chlorodibromomethane	5.00	<0.500	4.45	89	53--149
Chloroform	5.00	<0.500	4.32	86	51--138
Bromomethane	5.00	<0.500	4.49	90	10--242
Chloroethane	5.00	<0.500	4.33	87	14--230
Chloromethane	5.00	<0.500	3.68	74	10--273
2-Chlorotoluene	5.00	<0.500	4.91	98	60--140
1,3-Dichlorobenzene	5.00	<0.500	4.57	91	59--156
Dichlorodifluoromethane	5.00	<0.500	4.07	81	60--140
1,1-Dichloroethane	5.00	<0.500	4.15	83	59--155
cis-1,3-Dichloropropene	5.00	<0.500	4.71	94	10--227
trans-1,3-Dichloropropene	5.00	<0.500	4.61	92	17--183
1,1,2,2-Tetrachloroethane	5.00	<0.500	5.17	103	46--157
Trichlorofluoromethane	5.00	<0.500	4.08	82	17--181

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	9.30	93	74--127
Toluene d8	10	10.5	105	80--120
p-Bromofluorobenzene	10	9.66	97	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va053101.b/may312701027.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

Client: Envirocon, Inc.
Date Sampled: 23-MAY-2001 15:20 D4
Date Received: 25-MAY-2001 00:00
Analysis Date: 01-JUN-2001 04:06
File: /chem/5971A.i/va053101.b/may313001030.d
Project Info: BN/LIVINGSTON
Sample Info: 140101-1773 B-St.

Lab No.: 019-01-53992
Report Date: 06/01/2001 11:29
Extraction Method: EPA 5030
Sample Matrix: WATER; pH= < 2

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)				
Benzene	71-43-2	5	<0.50	U
Carbon tetrachloride	56-23-5	5	<0.50	U
Chlorobenzene	108-90-7	100	<0.50	U
1,2-Dichlorobenzene	95-50-1	600	<0.50	U
1,4-Dichlorobenzene	106-46-7	75	<0.50	U
1,2-Dichloroethane	107-06-2	5	<0.50	U
1,1-Dichloroethene	75-35-4	7	<0.50	U
cis-1,2-Dichloroethene	156-59-2	70	<0.50	U
trans-1,2-Dichloroethene	156-60-5	100	<0.50	U
1,2-Dichloropropane	78-87-5	5	<0.50	U
Ethylbenzene	100-41-4	700	<0.50	U
Methylene chloride	75-09-2	5	<0.50	U
Styrene	100-42-5	100	<0.50	U
Tetrachloroethene	127-18-4	5	<0.50	U
Toluene	108-88-3	1000	<0.50	U
1,2,4-Trichlorobenzene	120-82-1	70	<0.50	U
1,1,1-Trichloroethane	71-55-6	200	<0.50	U
1,1,2-Trichloroethane	79-00-5	5	<0.50	U
Trichloroethene	79-01-6	5	<0.50	U
Vinyl chloride	75-01-4	2	<0.50	U
m+p-Xylenes	108383/106423		<0.50	U
o-Xylene	95-47-6		<0.50	U
Total Xylenes		10000	<0.50	U
REGULATED VOC'S: TRIHALOMETHANES				
Bromodichloromethane	**75-27-4**	**Total**	**0.78**	
Bromoform	**75-25-2**	**of all**	**0.96**	
Chlorodibromomethane	**124-48-1**	**four**	**1.6**	
Chloroform	**67-66-3**	**100**	**<0.50**	**0.18J**
OTHER EPA LISTED VOC'S				
Bromobenzene	108-86-1	NR	<0.50	U
Bromochloromethane	74-97-5	NR	<0.50	U
Bromomethane	74-83-9	NR	<0.50	U
n-Butylbenzene	104-51-8	NR	<0.50	U
sec-Butylbenzene	135-98-8	NR	<0.50	U
tert-Butylbenzene	98-06-6	NR	<0.50	U
Chloroethane	75-00-3	NR	<0.50	U
Chloromethane	74-87-3	NR	<0.50	U
2-Chlorotoluene	95-49-8	NR	<0.50	U
4-Chlorotoluene	106-43-4	NR	<0.50	U
1,2-Dibromo-3-chloropropane	96-12-8	NA	<1.0	U
1,2-Dibromoethane	106-93-4	NA	<0.50	U
Dibromomethane	74-95-3	NR	<0.50	U

(report continued on page 2)

Lab No.: 019-01-53992

Sample Info: 140101-1773

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
1,3-Dichlorobenzene	541-73-1	NR	<0.50	U
Dichlorodifluoromethane	75-71-8	NR	<0.50	U
1,1-Dichloroethane	75-34-3	NR	<0.50	U
1,1-Dichloropropene	563-58-6	NR	<0.50	U
1,3-Dichloropropane	142-28-9	NR	<0.50	U
cis-1,3-Dichloropropene	10061-01-5	NR	<0.50	U
trans-1,3-Dichloropropene	10061-02-6	NR	<0.50	U
2,2-Dichloropropane	594-20-7	NR	<0.50	U
Hexachlorobutadiene	87-68-3	NR	<0.50	U
Isopropylbenzene	98-82-8	NR	<0.50	U
p-Isopropyltoluene	99-87-6	NR	<0.50	U
Methyl-t-butyl ether	1634-04-4	NR	<0.50	U
Naphthalene	91-20-3	NR	<0.50	U
n-Propylbenzene	103-65-1	NR	<0.50	U
1,1,1,2-Tetrachloroethane	630-20-6	NR	<0.50	U
1,1,2,2-Tetrachloroethane	79-34-5	NR	<0.50	U
Trichlorofluoromethane	75-69-4	NR	<0.50	U
1,2,3-Trichlorobenzene	87-61-6	NR	<0.50	U
1,2,3-Trichloropropane	96-18-4	NR	<0.50	U
1,2,4-Trimethylbenzene	95-63-6	NR	<0.50	U
1,3,5-Trimethylbenzene	108-67-8	NR	<0.50	U

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	9.05	90	74--127
Toluene d8	10.0	10.5	105	80--120
p-Bromofluorobenzene	10.0	9.70	97	80--120

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: ______ Reviewing Supervisor: ______

Quality Control Sample: Laboratory Reagent Blank 01-JUN-2001 00:36
Report Date: 06/01/2001 11:14
Extraction Method: EPA 5030
Sample Matrix: WATER
File: /chem/5971A.i/va053101.b/may312401024.d

Remarks: This Laboratory Reagent Blank Quality Control Sample was extracted and analyzed with your set of samples to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER	
----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)-----------					
Benzene	71-43-2	5	<0.50	U	
Carbon tetrachloride	56-23-5	5	<0.50	U	
Chlorobenzene	108-90-7	100	<0.50	U	
1,2-Dichlorobenzene	95-50-1	600	<0.50	U	
1,4-Dichlorobenzene	106-46-7	75	<0.50	U	
1,2-Dichloroethane	107-06-2	5	<0.50	U	
1,1-Dichloroethene	75-35-4	7	<0.50	U	
cis-1,2-Dichloroethene	156-59-2	70	<0.50	U	
trans-1,2-Dichloroethene	156-60-5	100	<0.50	U	
1,2-Dichloropropane	78-87-5	5	<0.50	U	
Ethylbenzene	100-41-4	700	<0.50	U	
Methylene chloride	75-09-2	5	<0.50	U	
Styrene	100-42-5	100	<0.50	U	✓
Tetrachloroethene	127-18-4	5	<0.50	U	
Toluene	108-88-3	1000	<0.50	U	
1,2,4-Trichlorobenzene	120-82-1	70	<0.50	U	
1,1,1-Trichloroethane	71-55-6	200	<0.50	U	
1,1,2-Trichloroethane	79-00-5	5	<0.50	U	
Trichloroethene	79-01-6	5	<0.50	U	
Vinyl chloride	75-01-4	2	<0.50	U	
m+p-Xylenes	108383/106423		<0.50	U	
2-Chloroethylvinyl ether	110-75-8	NR	<1.0	U	
o-Xylene	95-47-6		<0.50	U	
Total Xylenes		10000	<0.50	U	
----------------REGULATED VOC'S: TRIHALOMETHANES----------------					
Bromodichloromethane	75-27-4	Total	<0.50	U	
Bromoform	75-25-2	of all	<0.50	U	✓
Chlorodibromomethane	124-48-1	four	<0.50	U	
Chloroform	67-66-3	100	<0.50	U	
----------------------OTHER EPA LISTED VOC'S--------------------					
Bromobenzene	108-86-1	NR	<0.50	U	
Bromochloromethane	74-97-5	NR	<0.50	U	
Bromomethane	74-83-9	NR	<0.50	U	
n-Butylbenzene	104-51-8	NR	<0.50	U	
sec-Butylbenzene	135-98-8	NR	<0.50	U	
tert-Butylbenzene	98-06-6	NR	<0.50	U	✓
Chloroethane	75-00-3	NR	<0.50	U	
Chloromethane	74-87-3	NR	<0.50	U	
2-Chlorotoluene	95-49-8	NR	<0.50	U	
4-Chlorotoluene	106-43-4	NR	<0.50	U	
1,2-Dibromo-3-chloropropane	96-12-8	NA	<1.0	U	
1,2-Dibromoethane	106-93-4	NA	<0.50	U	

(report continued on page 2)

Quality Control Sample: Laboratory Reagent Blank 01-JUN-2001 00:36
Report Date: 06/01/2001 11:14

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
Dibromomethane	74-95-3	NR	<0.50	U
1,3-Dichlorobenzene	541-73-1	NR	<0.50	U
Dichlorodifluoromethane	75-71-8	NR	<0.50	U
1,1-Dichloroethane	75-34-3	NR	<0.50	U
1,1-Dichloropropene	563-58-6	NR	<0.50	U
1,3-Dichloropropane	142-28-9	NR	<0.50	U
cis-1,3-Dichloropropene	10061-01-5	NR	<0.50	U
trans-1,3-Dichloropropene	10061-02-6	NR	<0.50	U
2,2-Dichloropropane	594-20-7	NR	<0.50	U
Hexachlorobutadiene	87-68-3	NR	<0.50	U
Isopropylbenzene	98-82-8	NR	<0.50	U
p-Isopropyltoluene	99-87-6	NR	<0.50	U
Methyl-t-butyl ether	1634-04-4	NR	<0.50	U
Naphthalene	91-20-3	NR	<0.50	U
n-Propylbenzene	103-65-1	NR	<0.50	U
1,1,1,2-Tetrachloroethane	630-20-6	NR	<0.50	U
1,1,2,2-Tetrachloroethane	79-34-5	NR	<0.50	U
Trichlorofluoromethane	75-69-4	NR	<0.50	U
1,2,3-Trichlorobenzene	87-61-6	NR	<0.50	U
1,2,3-Trichloropropane	96-18-4	NR	<0.50	U
1,2,4-Trimethylbenzene	95-63-6	NR	<0.50	U
1,3,5-Trimethylbenzene	108-67-8	NR	<0.50	U

✓

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	9.28	93	74--127
Toluene d8	10.0	10.4	104	80--120
p-Bromofluorobenzene	10.0	9.63	96	80--120

✓

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: ________ Reviewing Supervisor: ________

```
                    EPA METHOD 524.2 BLANK SPIKE REPORT
                    ===================================
Quality Control Sample: Reference Sample Analysis 31-MAY-2001 23:25
Report Date: 06/01/2001   11:29
Extraction Method: EPA 5030
Sample Matrix: WATER
File: /chem/5971A.i/va053101.b/may312201022.d
Remarks: This reference sample was spiked into a blank sample matrix then
extracted and analyzed with your set of samples to determine if the methodology is
in control and to monitor the laboratory's ability to produce accurate results.
                                      CONCENTRATION UNITS = ug/L
     Spike Compound                   Added    Measured  %Rec   QC Limits
     ==================               =====    ========  =====  =========
     Benzene                          5.00       4.38     88     60--140
     Carbon tetrachloride             5.00       4.11     82     60--140
     Chlorobenzene                    5.00       4.44     89     60--140
     1,2-Dichlorobenzene              5.00       4.20     84     60--140
     1,4-Dichlorobenzene              5.00       4.34     87     60--140
     1,2-Dichloroethane               5.00       4.21     84     60--140
     1,1-Dichloroethene               5.00       4.11     82     60--140
     cis-1,2-Dichloroethene           5.00       4.72     94     60--140
     trans-1,2-Dichloroethene         5.00       4.85     97     60--140
     1,2-Dichloropropane              5.00       3.97     79     60--140
     Ethylbenzene                     5.00       4.72     94     60--140
     Methylene chloride               5.00       4.59     92     60--140
     Styrene                          5.00       4.50     90     60--140
     Tetrachloroethene                5.00       4.27     85     60--140
     Toluene                          5.00       4.60     92     60--140
     1,1,1-Trichloroethane            5.00       4.32     86     60--140
     1,1,2-Trichloroethane            5.00       4.84     97     60--140
     Trichloroethene                  5.00       4.38     88     60--140
     Vinyl chloride                   5.00       3.93     79     60--140
     m+p-Xylenes                      10.0       9.01     90     60--140
     o-Xylene                         5.00       4.62     92     60--140
     Bromodichloromethane             5.00       4.33     87     60--140
     Bromoform                        5.00       4.20     84     60--140
     Chlorodibromomethane             5.00       4.05     81     60--140
     Chloroform                       5.00       4.29     86     60--140
     Bromobenzene                     5.00       4.30     86     60--140
     Bromochloromethane               5.00       4.50     90     60--140
     Bromomethane                     5.00       4.43     89     60--140
     n-Butylbenzene                   5.00       4.85     97     60--140
     sec-Butylbenzene                 5.00       4.70     94     60--140
     tert-Butylbenzene                5.00       4.30     86     60--140
     Chloroethane                     5.00       4.45     89     60--140
     Chloromethane                    5.00       3.87     77     60--140
     2-Chlorotoluene                  5.00       4.78     96     60--140
     4-Chlorotoluene                  5.00       4.74     95     60--140
     1,2-Dibromo-3-chloropropane      5.00       4.67     93     60--140
     1,2-Dibromoethane                5.00       4.68     94     60--140
     Dibromomethane                   5.00       4.56     91     60--140
     1,3-Dichlorobenzene              5.00       4.33     87     60--140
     Dichlorodifluoromethane          5.00       4.36     87     60--140
     1,1-Dichloroethane               5.00       4.11     82     60--140
     1,1-Dichloropropene              5.00       4.45     89     60--140
     1,3-Dichloropropane              5.00       4.62     92     60--140
(report continued on page 2)
```

EPA METHOD 524.2 BLANK SPIKE REPORT

Quality Control Sample: Reference Sample Analysis 31-MAY-2001 23:25
Report Date: 06/01/2001 11:29

CONCENTRATION UNITS = ug/L

Spike Compound	Added	Measured	%Rec	QC Limits	
cis-1,3-Dichloropropene	5.00	4.48	90	60--140	
trans-1,3-Dichloropropene	5.00	4.34	87	60--140	
2,2-Dichloropropane	5.00	3.73	75	60--140	
Hexachlorobutadiene	5.00	4.45	89	60--140	
Isopropylbenzene	5.00	4.70	94	60--140	
p-Isopropyltoluene	5.00	4.27	85	60--140	
Methyl-t-butyl ether	5.00	4.03	81	60--140	
Naphthalene	5.00	4.87	97	60--140	✓
n-Propylbenzene	5.00	4.68	94	60--140	
1,1,1,2-Tetrachloroethane	5.00	4.29	86	60--140	
1,1,2,2-Tetrachloroethane	5.00	4.92	98	60--140	
Trichlorofluoromethane	5.00	4.10	82	60--140	
1,2,3-Trichlorobenzene	5.00	5.16	103	60--140	
1,2,3-Trichloropropane	5.00	4.79	96	60--140	
1,2,4-Trimethylbenzene	5.00	4.48	90	60--140	
1,3,5-Trimethylbenzene	5.00	4.68	94	60--140	

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits	
1,2-Dichloroethane d4	10.0	9.18	92	74--127	✓
Toluene d8	10.0	10.3	103	80--120	
p-Bromofluorobenzene	10.0	9.70	97	80--120	

REPORT COMMENTS: None

Analyst: ________ Reviewing Supervisor: ________

Lab Nos.: 001-01-53992 - 019-01-5399

Date: 25-MAY-01

Received by: Justin McMillan

Logged In by: Justin McMillan

SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

Chain of Custody Form Completed & Signed	Yes	Comments:
Chain of Custody Seal	Yes	Comments:
Intact	Yes	Comments:
Signature Match Chain of Custody vs. Seal	Yes	Comments:
Temperature Received	4 C	Comments:
Samples Received Within Holding Time	Yes	Comments:
Samples Received in Proper Containers	Yes	Comments:
Samples Received Properly Preserved(1)	N/A	Comments:

(1)Acid preservation of samples for volatile organics is not evaluated on this form.
Any preservation problems encountered for these samples are noted on the analytical parameter report pages.

Record of client contact:

Who: By: Date/Time:

Method of Shipping: Greyhound

Additional comments:

ENERGY LABORATORIES, INC
P.O. Box 30916 1120 South 27th Street
Billings, Montana 59107

toll-free 800-735-4489
voice 406-252-6325
fax 406-252-6069

CHAIN OF CUSTODY RECORD

PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES

Seals
4°c

P.O. #: —

Project Name / Address: BN/Livingston

Contact Name & Phone: Dan McCaffery 523-1186

Sampler's signature: Dan McCaffery

Invoice to: Attn: Dan McCaffery
Envirocon, P.O. Box 16655
Missoula, MT 59808

Report to: (same)

DATE	TIME	composite	grab sample	SAMPLE I.D.	number of containers	Sample Type: A W S V U O Air Water Soils/solids Vegetation Urine Other	Analysis Requested: 601 (Short List VOCs)	524.1 (VOCs)	ELI #	Comments, Special Instructions, etc.
5/22/01	235		X	140101 - 1766	2(A+B)		X		041-01-53992	note - analyze
	3 50			- 1767			X		012	only 1:
	4 31			- 1768			X		013	i.e. - either
5/23/01	9 50			- 1769			X		014	A or B -
	11 30			- 1770			X		015	not both!
	1 50			- 1771			X		016	
	1 55			- 1772			X		017	
	3 20			- 1773				X	019	
	3 45			- 1774			X		018	

1. Relinquished (signature) Dan McCaffery	Date 5/24/01	Time 2130	Received by: (signature)	
2. Relinquished (signature)	Date	Time	Received by: (signature)	
3. Relinquished (signature)	Date	Time	Received by (signature):	
4. Relinquished (signature)	Date 05/25/01	Time 09:15	Received for laboratory by (signature):	J. McNeill

Greyhound
4°C
Seals

ENERGY LABORATORIES, INC
P.O. Box 30916 1120 South 27th Street
Billings, Montana 59107

toll-free 800-735-4489
voice 406-252-6325
fax 406-252-6069

CHAIN OF CUSTODY RECORD

PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES

P.O. # ...... -

Project Name / Address: BN/Livingston

Contact Name & Phone: Dan McCaffery 523-1186

Sampler's signature: Dan McCaffery

Invoice to: Attn: Dan McCaffery
Envirocon, P.O. Box 16655
Missoula, MT 59808

Report to: (same)

DATE	TIME	composite	grab sample	SAMPLE I.D.	number of containers	Sample Type: A W S V U O Air Water Soils/solids Vegetation Urine Other	Analysis Requested: 601 (Short List VOCs)				ELI #			Comments, Special Instructions, etc.
5/21/01	2^{35}		X	140101 — 1756	2(A+B)		X				001-01-53992			note – analyze
	3^{40}			– 1757							002			only 1:
	3^{45}			– 1758							003			i.e. – either
	4^{38}			– 1759							004			A or B –
	5^{28}			– 1760							005			not both!
	5^{50}			– 1761							006			
5/22/01	11^{00}			– 1762							007			
	12^{15}			– 1763							008			
	1^{50}			– 1764							009			
	3^{10}			– 1765							010			

	Relinquished (signature)	Date	Time	Received by: (signature)		Relinquished (signature)	Date	Time	Received by (signature):
1.	Dan McCaffery	5/24/01	2^{30}		3.				
2.					4.		05/25/01	09:15	Received for laboratory by (signature):

MAY 2001

MDEQ SPLIT GROUND WATER SAMPLE RESULTS

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

Client: MT Dept of Environmental Quality

Login No.: 01-53974
Date: 01-Jun-01

EXTRACTABLE PETROLEUM HYDROCARBONS SCREENING ANALYSIS REPORT

BN/LIVINGSTON RAILYARD
Received:24-May-01

Lab No./Sample Information	Total Extractable Hydrocarbons	Units	Q	Date/Time Analyzed	Date Extracted	Surrogate %Rec.
001-01-53974 MW-89-10 23-May-01 15:08	0.40	mg/L(ppm)		29-May-01 19:48	25-May-01	89

Batch I.D.:EPHW010525E

Analyst:pf

Qualifiers(Q) and Notes

NOTE1: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time. This value is equivalent to EPA 8015M as Diesel.

EPH ALIPHATICS CONTINUING CALIBRATION REPORT

This continuing calibration report applies to the following analysis runs:
001-01-53974

Sample Name: cc1 EPH Aliphatics Cont Cal FID 23308 RC :0529DROH.cc1
Area File: G:\ORG\HP1\0529DROH.01A
Date & Time Collected: May 29, 2001 17:41:59
Method File: G:\ORG\HP1\SH0322MS.MET
Calibration File: G:\ORG\HP1\ALI0322M.CAL

COMPOUND	ACTUAL	MEASURED	%RECOVERY	%RECOVERY LIMITS
n-Nonane	200	211	105	75-125
n-Decane	200	213	106	75-125
n-Dodecane	200	211	106	75-125
n-Tetradecane	200	219	109	75-125
n-Hexadecane	200	214	107	75-125
n-Octadecane	200	212	106	75-125
n-Nonadecane	200	212	106	75-125
n-Eicosane	200	212	106	75-125
n-Docosane	200	211	105	75-125
n-Tetracosane	200	212	106	75-125
n-Hexacosane	200	214	107	75-125
n-Octacosane	200	214	107	75-125
n-Triacontane	200	215	107	75-125
n-Hexatriacontane	200	208	104	75-125
TOTAL EPH	2800	2977	106	75-125
*1-Chloro-octadecane	200	203	101	75-125

Batch: EPH-GRPW010525
Date: 30-May-01

EPH SCREEN BATCH QUALITY ASSURANCE REPORT

QC Sample I.D.	Diesel Range Organics	Diesel Range Organics as Diesel	Total Extractable Hydrocarbons	Units	Q	Date/Time Analyzed	Date Extracted	Surrogate %Rec.
Method Blank1	< 0.30	< 0.30	< 0.30	mg/L(ppm)		29-May-01 18:23	25-May-01	86

LABORATORY CONTROL SAMPLE REPORT

Date Analyzed: 29-May-01 19:06:00
Date Extracted: 25-May-01

CONSTITUENT	SPIKE ADDED mg/L(ppm)	MS CONC. mg/L(ppm)	MS % Rec.	QC Limits % Rec.	Surrogate %Rec.
EPH Spiking Mix	5.2	5.4	104	60 to 140	97

MATRIX SPIKE REPORT

MATRIX SPIKE

Laboratory Number: 001-01-53974
Date Analyzed: 29-May-01 20:30:00
Date Extracted: 25-May-01

CONSTITUENT	Spike Added mg/L(ppm)	Sample Conc. mg/L(ppm)	MS Conc. mg/L(ppm)	MS % Rec.	QC Limits %Rec.	Surrogate %Rec.
EPH Spiking Mix	10.4	0.4	10.0	92	60 to 140	95

MATRIX SPIKE

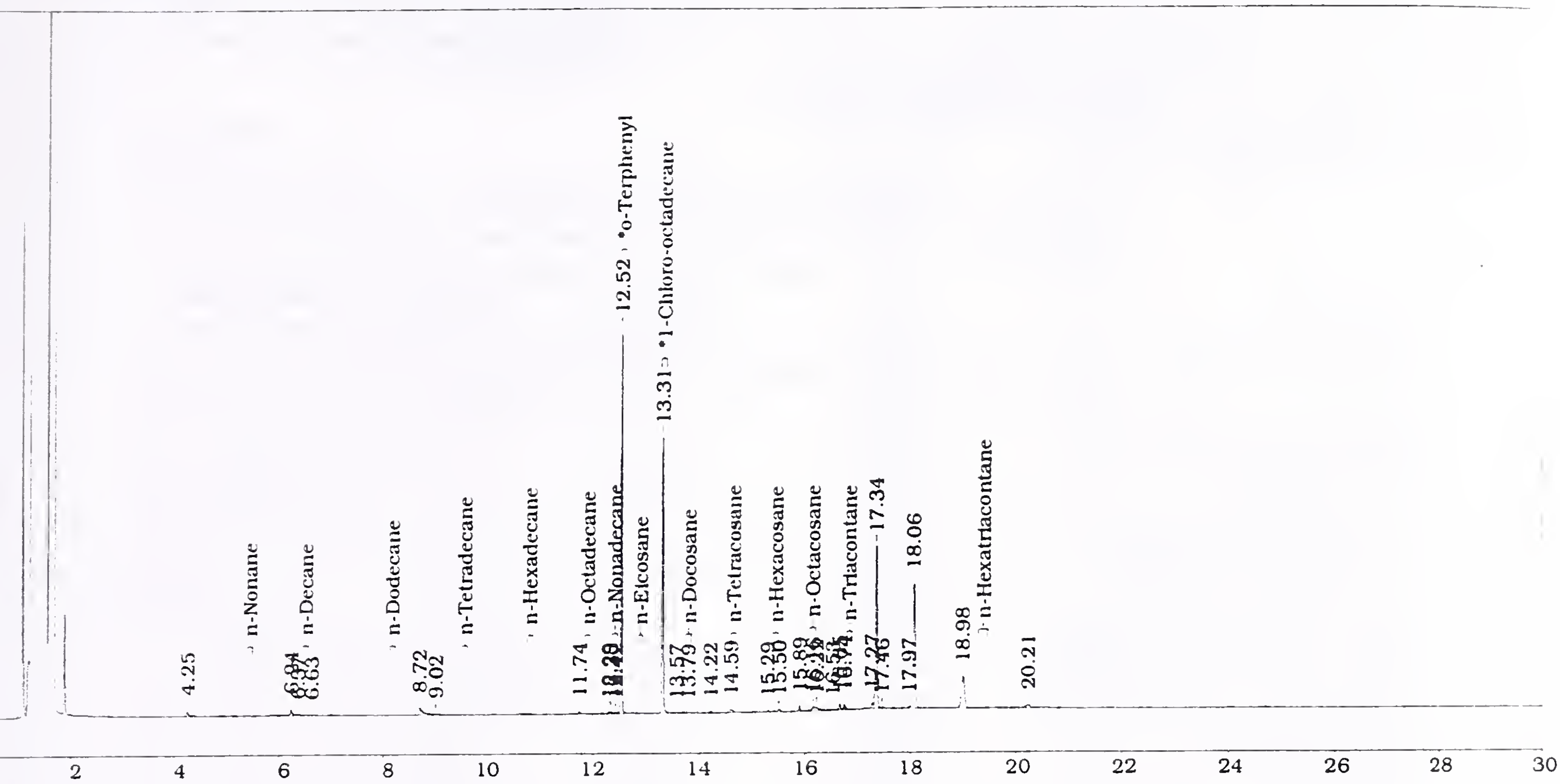
Laboratory Number: 001-01-90526
Date Analyzed: 30-May-01 17:36:00
Date Extracted: 29-May-01

CONSTITUENT	Spike Added mg/L(ppm)	Sample Conc. mg/L(ppm)	MSD Conc. mg/L(ppm)	MSD %Rec.	RPD	QC Limit RPD	QC Limit %Rec.	Surrogate %Rec.
EPH Spiking Mix	10.4	< 0.30	11.0	106	14	20	60 to 140	64

Analyst: mdw

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

```
e=G:\ORG\HP1\0529DROH.04R Date printed=05-29-2001 Time= 19:48:43
ple Name=001-01-53974 ;01-53974; W010525E Water :0529DROH.cc1
 to 30.0 min. Low Y=-5.0 High Y=100.0 mv Span=105.0
```



```
ERGY LABORATORIES, INC. MDEP EPH SCREENING (FID) ANALYSIS REPORT
mple Name: 001-01-53974 ;01-53974; W010525E Water :0529DROH.cc1
ea File: G:\ORG\HP1\0529DROH.04A
te & Time Collected: May 29, 2001  19:48:34
thod File: G:\ORG\HP1\SH0322M.MET
libration File: G:\ORG\HP1\ALI0322M.CAL
mple Weight: 1000          Dilution: 1          S.A.: 1

an RF for C9 to C18 Hydrocarbons: 446.9964
an RF for C19 to C36 Hydrocarbons: 450.8964
an RF for Total Extractable Hydrocarbons: 448.9464
 range for Diesel Range Organics: 6.458556  to  16.8761
 range for C9 to C18 Hydrocarbons: 5.390014  to  12.35654
 range for C19 to C36 Hydrocarbons: 12.38154  to  19.4829

aks subtracted from Total:
mpound Name       RT      Area      Amount    %Recovery
============      =====   ========  ========  =========
-Terphenyl        12.5     91,728      0.179   89
-Chloro-octade    13.3     72,546      0.183   91


O Area:               34,560    DRO AMOUNT          0.08
H Area:              178,071    TEH AMOUNT          0.40

-C18 Area:            17,924    Quant:              0.04
9-C36 Area           153,837    Quant:              0.34
```

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

Client: MT Dept of Environmental Quality
Date Sampled: 23-MAY-2001 15:05
Date Received: 24-MAY-2001 00:00
Analysis Date: 01-JUN-2001 15:23
File: /chem/5971A.i/va060101.b/jun010801008.d
Project Info: BN/LIVINGSTON RAILYARD
Sample Info: MW-~~8~~7-10
84-[illegible]

Lab No.: 002-01-53974
Report Date: 06/04/2001 11:18
Extraction Method: EPA 5030
Sample Matrix: WATER; pH= < 2

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)-----------				
Benzene	71-43-2	5	<0.50	U
Carbon tetrachloride	56-23-5	5	<0.50	U
Chlorobenzene	108-90-7	100	<0.50	U
1,2-Dichlorobenzene	95-50-1	600	<0.50	U
1,4-Dichlorobenzene	106-46-7	75	<0.50	U
1,2-Dichloroethane	107-06-2	5	<0.50	U
1,1-Dichloroethene	75-35-4	7	<0.50	U
cis-1,2-Dichloroethene	**156-59-2**	**70**	**3.2**	
trans-1,2-Dichloroethene	**156-60-5**	**100**	**<0.50**	**0.24J**
1,2-Dichloropropane	78-87-5	5	<0.50	U
Ethylbenzene	100-41-4	700	<0.50	U
Methylene chloride	75-09-2	5	<0.50	U
Styrene	100-42-5	100	<0.50	U
Tetrachloroethene	**127-18-4**	**5**	**40**	**D**
Toluene	108-88-3	1000	<0.50	U
1,2,4-Trichlorobenzene	120-82-1	70	<0.50	U
1,1,1-Trichloroethane	71-55-6	200	<0.50	U
1,1,2-Trichloroethane	79-00-5	5	<0.50	U
Trichloroethene	**79-01-6**	**5**	**3.3**	
Vinyl chloride	75-01-4	2	<0.50	U
m+p-Xylenes	108383/106423		<0.50	U
o-Xylene	95-47-6		<0.50	U
Total Xylenes		10000	<0.50	U
----------------REGULATED VOC'S: TRIHALOMETHANES----------------				
Bromodichloromethane	75-27-4	Total	<0.50	U
Bromoform	75-25-2	of all	<0.50	U
Chlorodibromomethane	124-48-1	four	<0.50	U
Chloroform	67-66-3	100	<0.50	U
--------------------OTHER EPA LISTED VOC'S--------------------				
Bromobenzene	108-86-1	NR	<0.50	U
Bromochloromethane	74-97-5	NR	<0.50	U
Bromomethane	74-83-9	NR	<0.50	U
n-Butylbenzene	104-51-8	NR	<0.50	U
sec-Butylbenzene	135-98-8	NR	<0.50	U
tert-Butylbenzene	98-06-6	NR	<0.50	U
Chloroethane	75-00-3	NR	<0.50	U
Chloromethane	74-87-3	NR	<0.50	U
2-Chlorotoluene	95-49-8	NR	<0.50	U
4-Chlorotoluene	106-43-4	NR	<0.50	U
1,2-Dibromo-3-chloropropane	96-12-8	NA	<1.0	U
1,2-Dibromoethane	106-93-4	NA	<0.50	U
Dibromomethane	74-95-3	NR	<0.50	U

(report continued on page 2)

Lab No.: 002-01-53974

Sample Info: MW-87-10

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
1,3-Dichlorobenzene	541-73-1	NR	<0.50	U
Dichlorodifluoromethane	75-71-8	NR	<0.50	U
1,1-Dichloroethane	75-34-3	NR	<0.50	U
1,1-Dichloropropene	563-58-6	NR	<0.50	U
1,3-Dichloropropane	142-28-9	NR	<0.50	U
cis-1,3-Dichloropropene	10061-01-5	NR	<0.50	U
trans-1,3-Dichloropropene	10061-02-6	NR	<0.50	U
2,2-Dichloropropane	594-20-7	NR	<0.50	U
Hexachlorobutadiene	87-68-3	NR	<0.50	U
Isopropylbenzene	98-82-8	NR	<0.50	U
p-Isopropyltoluene	99-87-6	NR	<0.50	U
Methyl-t-butyl ether	1634-04-4	NR	<0.50	U
Naphthalene	91-20-3	NR	<0.50	U
n-Propylbenzene	103-65-1	NR	<0.50	U
1,1,1,2-Tetrachloroethane	630-20-6	NR	<0.50	U
1,1,2,2-Tetrachloroethane	79-34-5	NR	<0.50	U
Trichlorofluoromethane	75-69-4	NR	<0.50	U
1,2,3-Trichlorobenzene	87-61-6	NR	<0.50	U
1,2,3-Trichloropropane	96-18-4	NR	<0.50	U
1,2,4-Trimethylbenzene	95-63-6	NR	<0.50	U
1,3,5-Trimethylbenzene	108-67-8	NR	<0.50	U

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	8.86	89	74--127
Toluene d8	10.0	10.4	104	80--120
p-Bromofluorobenzene	10.0	9.82	98	80--120

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.
D= Value derived from a 10 times dilution.
J= Estimated value. Present, but less than the limit of quantitation.
NR= No currently regulated amount.
NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: ______ Reviewing Supervisor: ______

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

Client: MT Dept of Environmental Quality
Date Sampled: 23-MAY-2001 10:06
Date Received: 24-MAY-2001 00:00
Analysis Date: 01-JUN-2001 03:31
File: /chem/5971A.i/va053101.b/may312901029.d
Project Info: BN/LIVINGSTON RAILYARD
Sample Info: MW-89-9

Lab No.: 003-01-53974
Report Date: 06/04/2001 11:24
Extraction Method: EPA 5030
Sample Matrix: WATER; pH= < 2

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
----------REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)----------				
Benzene	71-43-2	5	<0.50	U
Carbon tetrachloride	56-23-5	5	<0.50	U
Chlorobenzene	108-90-7	100	<0.50	U
1,2-Dichlorobenzene	95-50-1	600	<0.50	U
1,4-Dichlorobenzene	106-46-7	75	<0.50	U
1,2-Dichloroethane	107-06-2	5	<0.50	U
1,1-Dichloroethene	75-35-4	7	<0.50	U
cis-1,2-Dichloroethene	**156-59-2**	**70**	**<0.50**	**0.46J**
trans-1,2-Dichloroethene	156-60-5	100	<0.50	U
1,2-Dichloropropane	78-87-5	5	<0.50	U
Ethylbenzene	100-41-4	700	<0.50	U
Methylene chloride	75-09-2	5	<0.50	U
Styrene	100-42-5	100	<0.50	U
Tetrachloroethene	**127-18-4**	**5**	**44**	**D**
Toluene	108-88-3	1000	<0.50	U
1,2,4-Trichlorobenzene	120-82-1	70	<0.50	U
1,1,1-Trichloroethane	71-55-6	200	<0.50	U
1,1,2-Trichloroethane	79-00-5	5	<0.50	U
Trichloroethene	**79-01-6**	**5**	**1.2**	
Vinyl chloride	75-01-4	2	<0.50	U
m+p-Xylenes	108383/106423		<0.50	U
o-Xylene	95-47-6		<0.50	U
Total Xylenes		10000	<0.50	U
---------------REGULATED VOC'S: TRIHALOMETHANES---------------				
Bromodichloromethane	75-27-4	Total	<0.50	U
Bromoform	75-25-2	of all	<0.50	U
Chlorodibromomethane	124-48-1	four	<0.50	U
Chloroform	67-66-3	100	<0.50	U
--------------------OTHER EPA LISTED VOC'S--------------------				
Bromobenzene	108-86-1	NR	<0.50	U
Bromochloromethane	74-97-5	NR	<0.50	U
Bromomethane	74-83-9	NR	<0.50	U
n-Butylbenzene	104-51-8	NR	<0.50	U
sec-Butylbenzene	135-98-8	NR	<0.50	U
tert-Butylbenzene	98-06-6	NR	<0.50	U
Chloroethane	75-00-3	NR	<0.50	U
Chloromethane	74-87-3	NR	<0.50	U
2-Chlorotoluene	95-49-8	NR	<0.50	U
4-Chlorotoluene	106-43-4	NR	<0.50	U
1,2-Dibromo-3-chloropropane	96-12-8	NA	<1.0	U
1,2-Dibromoethane	106-93-4	NA	<0.50	U
Dibromomethane	74-95-3	NR	<0.50	U

(report continued on page 2)

Lab No.: 003-01-53974

Sample Info: MW-89-9

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
1,3-Dichlorobenzene	541-73-1	NR	<0.50	U
Dichlorodifluoromethane	75-71-8	NR	<0.50	U
1,1-Dichloroethane	75-34-3	NR	<0.50	U
1,1-Dichloropropene	563-58-6	NR	<0.50	U
1,3-Dichloropropane	142-28-9	NR	<0.50	U
cis-1,3-Dichloropropene	10061-01-5	NR	<0.50	U
trans-1,3-Dichloropropene	10061-02-6	NR	<0.50	U
2,2-Dichloropropane	594-20-7	NR	<0.50	U
Hexachlorobutadiene	87-68-3	NR	<0.50	U
Isopropylbenzene	98-82-8	NR	<0.50	U
p-Isopropyltoluene	99-87-6	NR	<0.50	U
Methyl-t-butyl ether	1634-04-4	NR	<0.50	U
Naphthalene	91-20-3	NR	<0.50	U
n-Propylbenzene	103-65-1	NR	<0.50	U
1,1,1,2-Tetrachloroethane	630-20-6	NR	<0.50	U
1,1,2,2-Tetrachloroethane	79-34-5	NR	<0.50	U
Trichlorofluoromethane	75-69-4	NR	<0.50	U
1,2,3-Trichlorobenzene	87-61-6	NR	<0.50	U
1,2,3-Trichloropropane	96-18-4	NR	<0.50	U
1,2,4-Trimethylbenzene	95-63-6	NR	<0.50	U
1,3,5-Trimethylbenzene	108-67-8	NR	<0.50	U

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	9.12	91	74--127
Toluene d8	10.0	10.3	103	80--120
p-Bromofluorobenzene	10.0	9.52	95	80--120

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

D= Value derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: ________ Reviewing Supervisor: ________

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

Client: MT Dept of Environmental Quality
Date Sampled: 23-MAY-2001 10:06
Date Received: 24-MAY-2001 00:00
Analysis Date: 01-JUN-2001 15:59
File: /chem/5971A.i/va060101.b/jun010901009.d
Project Info: BN/LIVINGSTON RAILYARD
Sample Info: MW-89-9

Lab No.: 003-01-53974 Dup
Report Date: 06/04/2001 11:31
Extraction Method: EPA 5030
Sample Matrix: WATER; pH= < 2

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)				
Benzene	71-43-2	5	<0.50	U
Carbon tetrachloride	56-23-5	5	<0.50	U
Chlorobenzene	108-90-7	100	<0.50	U
1,2-Dichlorobenzene	95-50-1	600	<0.50	U
1,4-Dichlorobenzene	106-46-7	75	<0.50	U
1,2-Dichloroethane	107-06-2	5	<0.50	U
1,1-Dichloroethene	75-35-4	7	<0.50	U
cis-1,2-Dichloroethene	**156-59-2**	**70**	**<0.50**	**0.44J**
trans-1,2-Dichloroethene	156-60-5	100	<0.50	U
1,2-Dichloropropane	78-87-5	5	<0.50	U
Ethylbenzene	100-41-4	700	<0.50	U
Methylene chloride	75-09-2	5	<0.50	U
Styrene	100-42-5	100	<0.50	U
Tetrachloroethene	**127-18-4**	**5**	**44**	**D**
Toluene	108-88-3	1000	<0.50	U
1,2,4-Trichlorobenzene	120-82-1	70	<0.50	U
1,1,1-Trichloroethane	71-55-6	200	<0.50	U
1,1,2-Trichloroethane	79-00-5	5	<0.50	U
Trichloroethene	**79-01-6**	**5**	**1.2**	
Vinyl chloride	75-01-4	2	<0.50	U
m+p-Xylenes	108383/106423		<0.50	U
o-Xylene	95-47-6		<0.50	U
Total Xylenes		10000	<0.50	U
REGULATED VOC'S: TRIHALOMETHANES				
Bromodichloromethane	75-27-4	Total	<0.50	U
Bromoform	75-25-2	of all	<0.50	U
Chlorodibromomethane	124-48-1	four	<0.50	U
Chloroform	67-66-3	100	<0.50	U
OTHER EPA LISTED VOC'S				
Bromobenzene	108-86-1	NR	<0.50	U
Bromochloromethane	74-97-5	NR	<0.50	U
Bromomethane	74-83-9	NR	<0.50	U
n-Butylbenzene	104-51-8	NR	<0.50	U
sec-Butylbenzene	135-98-8	NR	<0.50	U
tert-Butylbenzene	98-06-6	NR	<0.50	U
Chloroethane	75-00-3	NR	<0.50	U
Chloromethane	74-87-3	NR	<0.50	U
2-Chlorotoluene	95-49-8	NR	<0.50	U
4-Chlorotoluene	106-43-4	NR	<0.50	U
1,2-Dibromo-3-chloropropane	96-12-8	NA	<1.0	U
1,2-Dibromoethane	106-93-4	NA	<0.50	U
Dibromomethane	74-95-3	NR	<0.50	U

(report continued on page 2)

Lab No.: 003-01-53974 Dup

Sample Info: **MW-89-9**

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
1,3-Dichlorobenzene	541-73-1	NR	<0.50	U
Dichlorodifluoromethane	75-71-8	NR	<0.50	U
1,1-Dichloroethane	75-34-3	NR	<0.50	U
1,1-Dichloropropene	563-58-6	NR	<0.50	U
1,3-Dichloropropane	142-28-9	NR	<0.50	U
cis-1,3-Dichloropropene	10061-01-5	NR	<0.50	U
trans-1,3-Dichloropropene	10061-02-6	NR	<0.50	U
2,2-Dichloropropane	594-20-7	NR	<0.50	U
Hexachlorobutadiene	87-68-3	NR	<0.50	U
Isopropylbenzene	98-82-8	NR	<0.50	U
p-Isopropyltoluene	99-87-6	NR	<0.50	U
Methyl-t-butyl ether	1634-04-4	NR	<0.50	U
Naphthalene	91-20-3	NR	<0.50	U
n-Propylbenzene	103-65-1	NR	<0.50	U
1,1,1,2-Tetrachloroethane	630-20-6	NR	<0.50	U
1,1,2,2-Tetrachloroethane	79-34-5	NR	<0.50	U
Trichlorofluoromethane	75-69-4	NR	<0.50	U
1,2,3-Trichlorobenzene	87-61-6	NR	<0.50	U
1,2,3-Trichloropropane	96-18-4	NR	<0.50	U
1,2,4-Trimethylbenzene	95-63-6	NR	<0.50	U
1,3,5-Trimethylbenzene	108-67-8	NR	<0.50	U

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	8.68	87	74--127
Toluene d8	10.0	10.2	102	80--120
p-Bromofluorobenzene	10.0	9.93	99	80--120

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

D= Value derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: ______ Reviewing Supervisor: ______

Quality Control Sample: Laboratory Reagent Blank 01-JUN-2001 00:36
Report Date: 06/01/2001 16:35
Extraction Method: EPA 5030
Sample Matrix: WATER
File: /chem/5971A.i/va053101.b/may312401024.d
Remarks: This Laboratory Reagent Blank Quality Control Sample was extracted and analyzed with your set of samples to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)				
Benzene	71-43-2	5	<0.50	U
Carbon tetrachloride	56-23-5	5	<0.50	U
Chlorobenzene	108-90-7	100	<0.50	U
1,2-Dichlorobenzene	95-50-1	600	<0.50	U
1,4-Dichlorobenzene	106-46-7	75	<0.50	U
1,2-Dichloroethane	107-06-2	5	<0.50	U
1,1-Dichloroethene	75-35-4	7	<0.50	U
cis-1,2-Dichloroethene	156-59-2	70	<0.50	U
trans-1,2-Dichloroethene	156-60-5	100	<0.50	U
1,2-Dichloropropane	78-87-5	5	<0.50	U
Ethylbenzene	100-41-4	700	<0.50	U
Methylene chloride	75-09-2	5	<0.50	U
Styrene	100-42-5	100	<0.50	U
Tetrachloroethene	127-18-4	5	<0.50	U
Toluene	108-88-3	1000	<0.50	U
1,2,4-Trichlorobenzene	120-82-1	70	<0.50	U
1,1,1-Trichloroethane	71-55-6	200	<0.50	U
1,1,2-Trichloroethane	79-00-5	5	<0.50	U
Trichloroethene	79-01-6	5	<0.50	U
Vinyl chloride	75-01-4	2	<0.50	U
m+p-Xylenes	108383/106423		<0.50	U
o-Xylene	95-47-6		<0.50	U
Total Xylenes		10000	<0.50	U
REGULATED VOC'S: TRIHALOMETHANES				
Bromodichloromethane	75-27-4	Total	<0.50	U
Bromoform	75-25-2	of all	<0.50	U
Chlorodibromomethane	124-48-1	four	<0.50	U
Chloroform	67-66-3	100	<0.50	U
OTHER EPA LISTED VOC'S				
Bromobenzene	108-86-1	NR	<0.50	U
Bromochloromethane	74-97-5	NR	<0.50	U
Bromomethane	74-83-9	NR	<0.50	U
n-Butylbenzene	104-51-8	NR	<0.50	U
sec-Butylbenzene	135-98-8	NR	<0.50	U
tert-Butylbenzene	98-06-6	NR	<0.50	U
Chloroethane	75-00-3	NR	<0.50	U
Chloromethane	74-87-3	NR	<0.50	U
2-Chlorotoluene	95-49-8	NR	<0.50	U
4-Chlorotoluene	106-43-4	NR	<0.50	U
1,2-Dibromo-3-chloropropane	96-12-8	NA	<1.0	U
1,2-Dibromoethane	106-93-4	NA	<0.50	U
Dibromomethane	74-95-3	NR	<0.50	U

(report continued on page 2)

Quality Control Sample: Laboratory Reagent Blank 01-JUN-2001 00:36

Report Date: 06/01/2001 16:35

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
1,3-Dichlorobenzene	541-73-1	NR	<0.50	U
Dichlorodifluoromethane	75-71-8	NR	<0.50	U
1,1-Dichloroethane	75-34-3	NR	<0.50	U
1,1-Dichloropropene	563-58-6	NR	<0.50	U
1,3-Dichloropropane	142-28-9	NR	<0.50	U
cis-1,3-Dichloropropene	10061-01-5	NR	<0.50	U
trans-1,3-Dichloropropene	10061-02-6	NR	<0.50	U
2,2-Dichloropropane	594-20-7	NR	<0.50	U
Hexachlorobutadiene	87-68-3	NR	<0.50	U
Isopropylbenzene	98-82-8	NR	<0.50	U
p-Isopropyltoluene	99-87-6	NR	<0.50	U
Methyl-t-butyl ether	1634-04-4	NR	<0.50	U
Naphthalene	91-20-3	NR	<0.50	U
n-Propylbenzene	103-65-1	NR	<0.50	U
1,1,1,2-Tetrachloroethane	630-20-6	NR	<0.50	U
1,1,2,2-Tetrachloroethane	79-34-5	NR	<0.50	U
Trichlorofluoromethane	75-69-4	NR	<0.50	U
1,2,3-Trichlorobenzene	87-61-6	NR	<0.50	U
1,2,3-Trichloropropane	96-18-4	NR	<0.50	U
1,2,4-Trimethylbenzene	95-63-6	NR	<0.50	U
1,3,5-Trimethylbenzene	108-67-8	NR	<0.50	U

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	9.28	93	74--127
Toluene d8	10.0	10.4	104	80--120
p-Bromofluorobenzene	10.0	9.63	96	80--120

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

Quality Control Sample: Laboratory Reagent Blank 01-JUN-2001 12:18
Report Date: 06/01/2001 13:39
Extraction Method: EPA 5030
Sample Matrix: WATER
File: /chem/5971A.i/va060101.b/jun010501005.d

Remarks: This Laboratory Reagent Blank Quality Control Sample was extracted and analyzed with your set of samples to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
REGULATED VOLATILE ORGANIC CHEMICALS (VOC'S)				
Benzene	71-43-2	5	<0.50	U
Carbon tetrachloride	56-23-5	5	<0.50	U
Chlorobenzene	108-90-7	100	<0.50	U
1,2-Dichlorobenzene	95-50-1	600	<0.50	U
1,4-Dichlorobenzene	106-46-7	75	<0.50	U
1,2-Dichloroethane	107-06-2	5	<0.50	U
1,1-Dichloroethene	75-35-4	7	<0.50	U
cis-1,2-Dichloroethene	156-59-2	70	<0.50	U
trans-1,2-Dichloroethene	156-60-5	100	<0.50	U
1,2-Dichloropropane	78-87-5	5	<0.50	U
Ethylbenzene	100-41-4	700	<0.50	U
Methylene chloride	75-09-2	5	<0.50	U
Styrene	100-42-5	100	<0.50	U
Tetrachloroethene	127-18-4	5	<0.50	U
Toluene	108-88-3	1000	<0.50	U
1,2,4-Trichlorobenzene	120-82-1	70	<0.50	U
1,1,1-Trichloroethane	71-55-6	200	<0.50	U
1,1,2-Trichloroethane	79-00-5	5	<0.50	U
Trichloroethene	79-01-6	5	<0.50	U
Vinyl chloride	75-01-4	2	<0.50	U
m+p-Xylenes	108383/106423		<0.50	U
o-Xylene	95-47-6		<0.50	U
Total Xylenes		10000	<0.50	U
REGULATED VOC'S: TRIHALOMETHANES				
Bromodichloromethane	75-27-4	Total	<0.50	U
Bromoform	75-25-2	of all	<0.50	U
Chlorodibromomethane	124-48-1	four	<0.50	U
Chloroform	67-66-3	100	<0.50	U
OTHER EPA LISTED VOC'S				
Bromobenzene	108-86-1	NR	<0.50	U
Bromochloromethane	74-97-5	NR	<0.50	U
Bromomethane	74-83-9	NR	<0.50	U
n-Butylbenzene	104-51-8	NR	<0.50	U
sec-Butylbenzene	135-98-8	NR	<0.50	U
tert-Butylbenzene	98-06-6	NR	<0.50	U
Chloroethane	75-00-3	NR	<0.50	U
Chloromethane	74-87-3	NR	<0.50	U
2-Chlorotoluene	95-49-8	NR	<0.50	U
4-Chlorotoluene	106-43-4	NR	<0.50	U
1,2-Dibromo-3-chloropropane	96-12-8	NA	<1.0	U
1,2-Dibromoethane	106-93-4	NA	<0.50	U
Dibromomethane	74-95-3	NR	<0.50	U

(report continued on page 2)

Quality Control Sample: Laboratory Reagent Blank 01-JUN-2001 12:18
Report Date: **06/01/2001 13:39**

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

COMPOUNDS	CAS NO.	EPA MCL	RESULT	QUALIFIER
1,3-Dichlorobenzene	541-73-1	NR	<0.50	U
Dichlorodifluoromethane	75-71-8	NR	<0.50	U
1,1-Dichloroethane	75-34-3	NR	<0.50	U
1,1-Dichloropropene	563-58-6	NR	<0.50	U
1,3-Dichloropropane	142-28-9	NR	<0.50	U
cis-1,3-Dichloropropene	10061-01-5	NR	<0.50	U
trans-1,3-Dichloropropene	10061-02-6	NR	<0.50	U
2,2-Dichloropropane	594-20-7	NR	<0.50	U
Hexachlorobutadiene	87-68-3	NR	<0.50	U
Isopropylbenzene	98-82-8	NR	<0.50	U
p-Isopropyltoluene	99-87-6	NR	<0.50	U
Methyl-t-butyl ether	1634-04-4	NR	<0.50	U
Naphthalene	91-20-3	NR	<0.50	U
n-Propylbenzene	103-65-1	NR	<0.50	U
1,1,1,2-Tetrachloroethane	630-20-6	NR	<0.50	U
1,1,2,2-Tetrachloroethane	79-34-5	NR	<0.50	U
Trichlorofluoromethane	75-69-4	NR	<0.50	U
1,2,3-Trichlorobenzene	87-61-6	NR	<0.50	U
1,2,3-Trichloropropane	96-18-4	NR	<0.50	U
1,2,4-Trimethylbenzene	95-63-6	NR	<0.50	U
1,3,5-Trimethylbenzene	108-67-8	NR	<0.50	U

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	8.89	89	74--127
Toluene d8	10.0	10.5	105	80--120
p-Bromofluorobenzene	10.0	9.61	96	80--120

QUALIFIER CODE EXPLANATIONS AND NOTES:

U= Indicates compound was analyzed for but not detected.

NR= No currently regulated amount.

NA= Not applicable to this method. Concentrations are presented for screening purposes. For regulatory compliance, analyze using EPA method 504 which has lower detection limits.

REPORT COMMENTS: None

Analyst: ________ Reviewing Supervisor: ________

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 524.2 BLANK SPIKE REPORT

Quality Control Sample: Reference Sample Analysis 31-MAY-2001 11:10
Report Date: 06/04/2001 10:41
Extraction Method: EPA 5030
Sample Matrix: WATER
File: /chem/5971A.i/va053101.b/may310301003.d
Remarks: This reference sample was spiked into a blank sample matrix then extracted and analyzed with your set of samples to determine if the methodology is in control and to monitor the laboratory's ability to produce accurate results.

Spike Compound	CONCENTRATION UNITS = ug/L Added	Measured	%Rec	QC Limits
Benzene	5.00	4.67	93	60--140
Carbon tetrachloride	5.00	4.48	90	60--140
Chlorobenzene	5.00	4.92	98	60--140
1,2-Dichlorobenzene	5.00	5.08	102	60--140
1,4-Dichlorobenzene	5.00	4.85	97	60--140
1,2-Dichloroethane	5.00	4.30	86	60--140
1,1-Dichloroethene	5.00	4.47	89	60--140
cis-1,2-Dichloroethene	5.00	5.06	101	60--140
trans-1,2-Dichloroethene	5.00	5.27	105	60--140
1,2-Dichloropropane	5.00	4.15	83	60--140
Ethylbenzene	5.00	5.11	102	60--140
Methylene chloride	5.00	4.91	98	60--140
Styrene	5.00	5.03	101	60--140
Tetrachloroethene	5.00	4.89	98	60--140
Toluene	5.00	4.86	97	60--140
1,1,1-Trichloroethane	5.00	4.40	88	60--140
1,1,2-Trichloroethane	5.00	5.10	102	60--140
Trichloroethene	5.00	4.71	94	60--140
Vinyl chloride	5.00	3.98	80	60--140
m+p-Xylenes	10.0	10.2	102	60--140
o-Xylene	5.00	5.18	104	60--140
Bromodichloromethane	5.00	4.74	95	60--140
Bromoform	5.00	4.64	93	60--140
Chlorodibromomethane	5.00	4.57	91	60--140
Chloroform	5.00	4.60	92	60--140
Bromobenzene	5.00	4.77	95	60--140
Bromochloromethane	5.00	4.53	91	60--140
Bromomethane	5.00	4.51	90	60--140
n-Butylbenzene	5.00	5.40	108	60--140
sec-Butylbenzene	5.00	5.17	103	60--140
tert-Butylbenzene	5.00	4.88	98	60--140
Chloroethane	5.00	4.51	90	60--140
Chloromethane	5.00	3.83	77	60--140
2-Chlorotoluene	5.00	5.12	102	60--140
4-Chlorotoluene	5.00	5.06	101	60--140
1,2-Dibromo-3-chloropropane	5.00	4.76	95	60--140
1,2-Dibromoethane	5.00	5.07	101	60--140
Dibromomethane	5.00	4.81	96	60--140
1,3-Dichlorobenzene	5.00	4.95	99	60--140
Dichlorodifluoromethane	5.00	4.35	87	60--140
1,1-Dichloroethane	5.00	4.36	87	60--140
1,1-Dichloropropene	5.00	4.76	95	60--140
1,3-Dichloropropane	5.00	4.97	99	60--140

(report continued on page 2)

Lab No.: vref053101

Sample Info:

EPA METHOD 524.2
VOLATILE ORGANICS ANALYSIS REPORT (continued)

CONCENTRATION UNITS = ug/L

Spike Compound	Added	Measured	%Rec	QC Limits
cis-1,3-Dichloropropene	5.00	5.06	101	60--140
trans-1,3-Dichloropropene	5.00	4.88	98	60--140
2,2-Dichloropropane	5.00	4.85	97	60--140
Hexachlorobutadiene	5.00	5.13	103	60--140
Isopropylbenzene	5.00	5.34	107	60--140
p-Isopropyltoluene	5.00	4.90	98	60--140
Methyl-t-butyl ether	5.00	4.21	84	60--140
Naphthalene	5.00	5.18	104	60--140
n-Propylbenzene	5.00	5.31	106	60--140
1,1,1,2-Tetrachloroethane	5.00	4.69	94	60--140
1,1,2,2-Tetrachloroethane	5.00	5.08	102	60--140
Trichlorofluoromethane	5.00	4.17	83	60--140
1,2,3-Trichlorobenzene	5.00	5.42	108	60--140
1,2,3-Trichloropropane	5.00	5.10	102	60--140
1,2,4-Trimethylbenzene	5.00	4.95	99	60--140
1,3,5-Trimethylbenzene	5.00	5.14	103	60--140

SURROGATE RECOVERY REPORT

Surrogate Compound	Added ug/L	Measured ug/L	%Rec	QC Limits
1,2-Dichloroethane d4	10.0	9.27	93	74--127
Toluene d8	10.0	9.95	99	80--120
p-Bromofluorobenzene	10.0	9.62	96	80--120

REPORT COMMENTS: None

Analyst: ________ Reviewing Supervisor: ________

Lab Nos.: 001-01-53974 - 003-01-53974
Date: 24-MAY-01
Received by: Randa Nees
Logged In by: Randa Nees

SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

Chain of Custody Form Completed & Signed	Yes	Comments:
Chain of Custody Seal	No	Comments:
Intact	N/A	Comments:
Signature Match Chain of Custody vs. Seal	N/A	Comments:
Temperature Received	9 C	Comments:
Samples Received Within Holding Time	Yes	Comments:
Samples Received in Proper Containers	Yes	Comments:
Samples Received Properly Preserved(1)	Yes	Comments:

(1)Acid preservation of samples for volatile organics is not evaluated on this form. Any preservation problems encountered for these samples are noted on the analytical parameter report pages.

Record of client contact:

Who: Denise Martin By: Randa Nees Date/Time: 05/24/01 @ 13:00

Method of Shipping: Fed Ex 826255838904

Additional comments: No raw sample submitted for 8270 on samplle MW87-10.

NOVEMBER 2001

BNSF GROUND WATER SAMPLE RESULTS

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

file

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1775-A AND B 1-87-3
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 001-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/26/01 15:30
Date Received: 11/30/01
Date Analyzed: 12/06/01 12:53

Δ 1

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**2.6**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**(0.41)(J)**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**52(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**4.7**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.90	99	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.95	99	80--120

✓

REPORT COMMENTS: None

Analyst: HYC Reviewing Supervisor: ________ /chem/5971A.i/va120601.b/dec060601006.d

EPA METHOD 624

Client: **Envirocon, Inc.** 89-4
Sample ID: 140101-1776-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 002-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/26/01 16:30
Date Received: 11/30/01
Date Analyzed: 12/06/01 14:19

Δ10

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**2.2**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**77(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.5**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.2	102	74--127 ✓
Toluene d8	10	9.94	99	80--120
p-Bromofluorobenzene	10	9.41	94	80--120

REPORT COMMENTS: None

Analyst: HYC Reviewing Supervisor: MM /chem/5971A.i/va120601.b/dec060801008.d

EPA METHOD 624

89-9

Δ9

Client:	**Envirocon, Inc.**	Date Reported:	12/12/01
Sample ID:	140101-1777-A AND B	Date Sampled:	11/27/01 15:10
Project Info:	PROJ NO. 140101, BN/LIVINGSTON	Date Received:	11/30/01
Lab ID:	003-01-60499	Date Analyzed:	12/06/01 15:12
Matrix:	WATER; pH= < 2		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.3**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**44(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**2.3**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	10.4	104	74--127
Toluene d8	10	9.92	99	80--120
p-Bromofluorobenzene	10	9.72	97	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec060901009.d

ENERGY LABORATORIES
ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client: **Envirocon, Inc.** 89-9 duplicate
Sample ID: 140101-1778-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 004-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/27/01 15:15
Date Received: 11/30/01
Date Analyzed: 12/06/01 13:33

Δ9

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.4**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**43(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**2.4**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.5	105	74--127
Toluene d8	10	9.88	99	80--120 ✓
p-Bromofluorobenzene	10	9.78	98	80--120

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec060701007.d

EPA METHOD 624

Client: **Envirocon, Inc.** 89-3
Sample ID: 140101-1779-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 005-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/27/01 14:45
Date Received: 11/30/01
Date Analyzed: 12/06/01 15:47

Δ9

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**0.59**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**185(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**2.8**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.
D= Value was derived from a 100 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.4	104	74--127
Toluene d8	10	10.1	101	80--120 ✓
p-Bromofluorobenzene	10	9.86	99	80--120

REPORT COMMENTS: None

Analyst: JHC Reviewing Supervisor: MM /chem/5971A.i/va120601.b/dec061001010.d

EPA METHOD 624

Client: **Envirocon, Inc.** 90-3
Sample ID: 140101-1780-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 006-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/27/01 16:40
Date Received: 11/30/01
Date Analyzed: 12/06/01 16:20

Δ9

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**13**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**0.82**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.4	104	74--127
Toluene d8	10	10	100	80--120
p-Bromofluorobenzene	10	9.93	99	80--120

✓

REPORT COMMENTS: None

Analyst: HGC Reviewing Supervisor: MM /chem/5971A.i/va120601.b/dec061101011.d

EPA METHOD 624

Client: **Envirocon, Inc.** 90-3 lab duplicate
Sample ID: 140101-1780-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: DP6-01-60499 Dup
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/27/01 16:40
Date Received: 11/30/01
Date Analyzed: 12/07/01 12:59

A1

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**14**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**0.86**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.60	96	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	10.1	101	80--120

✓

REPORT COMMENTS: None

Analyst: ________ Reviewing Supervisor: ________ /chem/5971A.i/va120701.b/dec070601006.d

A8

EPA METHOD 624

Client: **Envirocon, Inc.** 92-1
Sample ID: 140101-1781-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 007-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/28/01 10:45
Date Received: 11/30/01
Date Analyzed: 12/06/01 16:54

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION ($\mu g/L$)*	*LIMIT OF QUANTITATION($\mu g/L$)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.0**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**94(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION($\mu g/L$) ADDED	CONCENTRATION($\mu g/L$) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.6	106	74--127
Toluene d8	10	9.87	99	80--120
p-Bromofluorobenzene	10	9.83	98	80--120

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va120601.b/dec061201012.d

EPA METHOD 624

Client: **Envirocon, Inc.** L-87-2
Sample ID: 140101-1782-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 008-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/28/01 11:45
Date Received: 11/30/01
Date Analyzed: 12/06/01 17:28

Δ8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION ($\mu g/L$)	LIMIT OF QUANTITATION($\mu g/L$)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	**Chlorobenzene**	**29(D)**	0.50
95-50-1	**1,2-Dichlorobenzene**	**1.7**	0.50
106-46-7	**1,4-Dichlorobenzene**	**3.8**	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**18(D)**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**0.91**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**1.1**	0.50
75-01-4	**Vinyl chloride**	**16**	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	**2-Chlorotoluene**	**49(D)**	0.50
541-73-1	**1,3-Dichlorobenzene**	**0.55**	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.
D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION($\mu g/L$) ADDED	CONCENTRATION($\mu g/L$) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.2	102	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.64	96	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec061301013.d

EPA METHOD 624

Client: **Envirocon, Inc.** L-88-10
Sample ID: 140101-1783-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 009-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/28/01 12:30
Date Received: 11/30/01
Date Analyzed: 12/06/01 18:02

D8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	**Chlorobenzene**	**6.1**	0.50
95-50-1	**1,2-Dichlorobenzene**	**0.59**	0.50
106-46-7	**1,4-Dichlorobenzene**	**1.2**	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**13**	0.50
156-60-5	**trans-1,2-Dichloroethene**	**(0.35)(J)**	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**28(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**7.9**	0.50
75-01-4	**Vinyl chloride**	**1.0**	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	**2-Chlorotoluene**	**1.5**	0.50
541-73-1	**1,3-Dichlorobenzene**	**(0.23)(J)**	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.2	102	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.88	99	80--120

✓

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: LWM /chem/5971A.i/va120601.b/dec061401014.d

EPA METHOD 624

Client:	**Envirocon, Inc.**	L-87-8	Date Reported:	12/12/01
Sample ID:	140101-1784-A AND B		Date Sampled:	11/28/01 13:15
Project Info:	PROJ NO. 140101, BN/LIVINGSTON		Date Received:	11/30/01
Lab ID:	010-01-60499		Date Analyzed:	12/06/01 18:35
Matrix:	WATER; pH= < 2			

A 8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**2.6**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**1.8**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**5.6**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE	
1,2-Dichloroethane d4	10	10.2	102	74--127	✓
Toluene d8	10	10.6	106	80--120	
p-Bromofluorobenzene	10	10.7	107	80--120	

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec061501015.d

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported:	12/12/01
Sample ID:	140101-1785-A AND B 92-2	Date Sampled:	11/28/01 15:45
Project Info:	PROJ NO. 140101, BN/LIVINGSTON	Date Received:	11/30/01
Lab ID:	011-01-60499	Date Analyzed:	12/06/01 19:11
Matrix:	WATER; pH= < 2		

Δ8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**(0.41)(J)**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**12**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**0.86**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	9.84	98	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	10	100	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec061601016.d

EPA METHOD 624

Client: **Envirocon, Inc.** 9H-2
Sample ID: 140101-1786-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 012-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/28/01 16:50
Date Received: 11/30/01
Date Analyzed: 12/06/01 23:09

A 8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**(0.22)(J)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.3	103	74--127
Toluene d8	10	9.99	100	80--120
p-Bromofluorobenzene	10	9.79	98	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec062301023.d

EPA METHOD 624

A7

Client:	**Envirocon, Inc.**	Date Reported:	12/12/01
Sample ID:	140101-1787-A AND B trip blank	Date Sampled:	11/29/01 09:40
Project Info:	PROJ NO. 140101, BN/LIVINGSTON	Date Received:	11/30/01
Lab ID:	013-01-60499	Date Analyzed:	12/06/01 23:45
Matrix:	WATER; pH= < 2		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	**Chloroform**	**(0.27)(J)**	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.5	105	74--127
Toluene d8	10	10.2	102	80--120
p-Bromofluorobenzene	10	9.62	96	80--120

✓

REPORT COMMENTS: None

Analyst: JHC Reviewing Supervisor: MJ

/chem/5971A i/va120601.b/dec062401024.d

EPA METHOD 624

MW-12 (O'Connor)

Client:	**Envirocon, Inc.**	Date Reported:	12/12/01
Sample ID:	140101-1788-A AND B	Date Sampled:	11/29/01 11:45
Project Info:	PROJ NO. 140101, BN/LIVINGSTON	Date Received:	11/30/01
Lab ID:	014-01-60499	Date Analyzed:	12/07/01 00:22
Matrix:	WATER; pH= < 2		

Δ

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**2.5**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	10.5	105	74--127
Toluene d8	10	10	100	80--120
p-Bromofluorobenzene	10	9.69	97	80--120

✓

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: ______ /chem/5971A.i/va120601.b/dec062501025.d

EPA METHOD 624

Client: **Envirocon, Inc.**
Sample ID: 140101-1789-A AND B L-87-5
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 015-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/29/01 12:20
Date Received: 11/30/01
Date Analyzed: 12/07/01 00:56

Δ8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**1.2**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**35(D)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**2.2**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.4	104	74--127
Toluene d8	10	9.93	99	80--120 ✓
p-Bromofluorobenzene	10	9.90	99	80--120

REPORT COMMENTS: None

Analyst: HJC Reviewing Supervisor: ________ /chem/5971A.i/va120601.b/dec062601026.d

EPA METHOD 624

Client: **Envirocon, Inc.** 9A-1
Sample ID: 140101-1790-A AND B
Project Info: PROJ NO. 140101, BN/LIVINGSTON
Lab ID: 016-01-60499
Matrix: WATER; pH= < 2

Date Reported: 12/12/01
Date Sampled: 11/29/01 15:20
Date Received: 11/30/01
Date Analyzed: 12/07/01 01:31

Δ

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**1.5**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.6	106	74--127
Toluene d8	10	10.3	103	80--120
p-Bromofluorobenzene	10	9.86	99	80--120

✓

REPORT COMMENTS: None

Analyst:________ Reviewing Supervisor:________ /chem/5971A.i/va120601 b/dec062701027.d

EPA METHOD 624

Client:	**Envirocon, Inc.**	Date Reported: 12/12/01
Sample ID:	140101-1791-A AND B	Date Sampled: 11/29/01 15:30
Project Info:	PROJ NO. 140101, BN/LIVINGSTON	Date Received: 11/30/01
Lab ID:	017-01-60499	Date Analyzed: 12/07/01 02:07
Matrix:	WATER; pH= < 2	

94-1 duplicate

Δ8

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**1.6**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.5	105	74--127
Toluene d8	10	10	100	80--120
p-Bromofluorobenzene	10	9.93	99	80--120

✓

REPORT COMMENTS: None

Analyst: HGC Reviewing Supervisor: MM /chem/5971A.i/va120601.b/dec062801028.d

EPA METHOD 624

Client:	**Envirocon, Inc.** 89-1	Date Reported:	12/12/01
Sample ID:	140101-1792-A AND B	Date Sampled:	11/29/01 16:30
Project Info:	PROJ NO. 140101, BN/LIVINGSTON	Date Received:	11/30/01
Lab ID:	018-01-60499	Date Analyzed:	12/07/01 02:40
Matrix:	WATER; pH= < 2		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**(0.35)(J)**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

	CONCENTRATION(μg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	10.7	107	74--127
Toluene d8	10	9.94	99	80--120
p-Bromofluorobenzene	10	9.60	96	80--120

REPORT COMMENTS: None

Analyst: HGC Reviewing Supervisor: ________ /chem/5971A.i/va120601.b/dec062901029.d

EPA METHOD 624

Rainbow Motel

D8

Client:	**Envirocon, Inc.**	Date Reported:	12/12/01
Sample ID:	140101-1793-A AND B	Date Sampled:	11/29/01 17:00
Project Info:	PROJ NO. 140101, BN/LIVINGSTON	Date Received:	11/30/01
Lab ID:	019-01-60499	Date Analyzed:	12/07/01 03:14
Matrix:	WATER; pH= < 2		

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	**Chlorobenzene**	**(0.39)(J)**	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	**cis-1,2-Dichloroethene**	**3.6**	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	**Tetrachloroethene**	**15**	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	**Trichloroethene**	**3.8**	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

J= Estimated value. Present, but less than the limit of quantitation.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.6	106	74--127
Toluene d8	10	10.1	101	80--120
p-Bromofluorobenzene	10	9.96	100	80--120

✓

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec063001030.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: SAMPLE MATRIX SPIKES

Laboratory ID: S11-01-60499ms Matrix Spike 92-2
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 12/12/01
Date Analyzed: 12/07/01 20:04

	---------CONCENTRATION(μg/L)-----------			PERCENT	ACCEPTANCE
SPIKE COMPOUNDS	*ADDED*	*SAMPLE*	*SPIKE*	*RECOVERY*	*RANGE*
Carbon tetrachloride	5.00	<0.500	5.24	105	70--140
Chlorobenzene	5.00	<0.500	4.76	95	37--160
1,2-Dichlorobenzene	5.00	<0.500	4.86	97	18--190
1,4-Dichlorobenzene	5.00	<0.500	4.80	96	18--190
1,2-Dichloroethane	5.00	<0.500	4.99	100	49--155
1,1-Dichloroethene	5.00	<0.500	4.89	98	10--134
cis-1,2-Dichloroethene	5.00	<0.500	4.98	100	60--140
trans-1,2-Dichloroethene	5.00	<0.500	4.93	99	54--156
1,2-Dichloropropane	5.00	<0.500	4.58	92	10--210
Methylene chloride	5.00	<0.500	4.84	97	10--221
Tetrachloroethene(1)	5.00	11.7	13.9	83	64--148
1,1,1-Trichloroethane	5.00	<0.500	5.05	101	52--162
1,1,2-Trichloroethane	5.00	<0.500	4.63	93	52--150
Trichloroethene	5.00	<0.500	5.57	111	71--157
Vinyl chloride	5.00	<0.500	4.70	94	60--251
2-Chloroethylvinyl ether	5.00	<1.00	<1.00	0*	10--305
Bromodichloromethane	5.00	<0.500	4.86	97	35--140
Bromoform	5.00	<0.500	4.67	93	45--169
Chlorodibromomethane	5.00	<0.500	4.83	97	53--149
Chloroform	5.00	<0.500	4.79	96	51--138
Bromomethane	5.00	<0.500	6.00	120	10--242
Chloroethane	5.00	<0.500	5.28	106	14--230
Chloromethane	5.00	<0.500	4.77	95	10--273
2-Chlorotoluene	5.00	<0.500	4.66	93	60--140
1,3-Dichlorobenzene	5.00	<0.500	4.81	96	59--156
Dichlorodifluoromethane	5.00	<0.500	5.54	111	60--140
1,1-Dichloroethane	5.00	<0.500	4.78	96	59--155
cis-1,3-Dichloropropene	5.00	<0.500	4.71	94	10--227
trans-1,3-Dichloropropene	5.00	<0.500	5.16	103	17--183
1,1,2,2-Tetrachloroethane	5.00	<0.500	4.45	89	46--157
Trichlorofluoromethane	5.00	<0.500	5.07	101	17--181

(1)= Because the spike amount was significantly less than the amount found in the sample, the percent recovery values are based on the spike amount plus the amount found in the sample.
***= Value outside QC advisory limits. The compound 2-Chloroethylvinyl ether is known to be very reactive. It was recovered within QC advisory limits on the Blank Matrix Spike. The recovery failure appears to be due to reactivity in the sample matrix.**

Runtime Quality Assurance Report

	CONCENTRATION(μg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
1,2-Dichloroethane d4	10	10.4	104	74--127
Toluene d8	10	10.5	105	80--120
p-Bromofluorobenzene	10	9.76	98	80--120

REPORT COMMENTS: None

Analyst: _______ Reviewing Supervisor: _______ /chem/5971A.i/va120701.b/dec071701017.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 12/12/01
Date Analyzed: 12/06/01 12:17

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

✓

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.3	103	74--127
Toluene d8	10	10	100	80--120
p-Bromofluorobenzene	10	10	100	80--120

✓

REPORT COMMENTS: None

Analyst:____ Reviewing Supervisor:____ /chem/5971A.i/va120601.b/dec060501005.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 12/12/01
Date Analyzed: 12/06/01 22:35

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (μg/L)	LIMIT OF QUANTITATION(μg/L)
56-23-5	Carbon tetrachloride	ND	0.50
108-90-7	Chlorobenzene	ND	0.50
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.50
107-06-2	1,2-Dichloroethane	ND	0.50
75-35-4	1,1-Dichloroethene	ND	0.50
156-59-2	cis-1,2-Dichloroethene	ND	0.50
156-60-5	trans-1,2-Dichloroethene	ND	0.50
78-87-5	1,2-Dichloropropane	ND	0.50
75-09-2	Methylene chloride	ND	0.50
127-18-4	Tetrachloroethene	ND	0.50
71-55-6	1,1,1-Trichloroethane	ND	0.50
79-00-5	1,1,2-Trichloroethane	ND	0.50
79-01-6	Trichloroethene	ND	0.50
75-01-4	Vinyl chloride	ND	0.50
110-75-8	2-Chloroethylvinyl ether	ND	1.0
75-27-4	Bromodichloromethane	ND	0.50
75-25-2	Bromoform	ND	0.50
124-48-1	Chlorodibromomethane	ND	0.50
67-66-3	Chloroform	ND	0.50
74-83-9	Bromomethane	ND	0.50
75-00-3	Chloroethane	ND	0.50
74-87-3	Chloromethane	ND	0.50
95-49-8	2-Chlorotoluene	ND	0.50
541-73-1	1,3-Dichlorobenzene	ND	0.50
75-71-8	Dichlorodifluoromethane	ND	0.50
75-34-3	1,1-Dichloroethane	ND	0.50
10061-01-5	cis-1,3-Dichloropropene	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	0.50
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50
75-69-4	Trichlorofluoromethane	ND	0.50

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.1	101	74--127
Toluene d8	10	10.3	103	80--120
p-Bromofluorobenzene	10	9.86	99	80--120

REPORT COMMENTS: None

Analyst:______ Reviewing Supervisor:______ /chem/5971A.i/va120601.b/dec062201022.d

QUALITY ASSURANCE REPORT FOR EPA METHOD 624: REFERENCE STANDARD BLANK MATRIX SPIKE

Sample ID: Quality Assurance Blank Matrix Spike
Matrix: WATER
Extract Method: EPA 5030

Date Reported: 12/12/01
Date Analyzed: 12/06/01 10:10

SPIKE COMPOUNDS	*CONCENTRATION(µg/L) ADDED*	*MEASURED*	*PERCENT RECOVERY*	*ACCEPTANCE RANGE*
Carbon tetrachloride	5.00	4.61	92	70--140
Chlorobenzene	5.00	4.52	90	37--160
1,2-Dichlorobenzene	5.00	4.25	85	18--190
1,4-Dichlorobenzene	5.00	4.55	91	18--190
1,2-Dichloroethane	5.00	4.90	98	49--155
1,1-Dichloroethene	5.00	4.36	87	10--134
cis-1,2-Dichloroethene	5.00	4.38	88	60--140
trans-1,2-Dichloroethene	5.00	4.55	91	54--156
1,2-Dichloropropane	5.00	4.35	87	10--210
Methylene chloride	5.00	4.61	92	10--221
Tetrachloroethene	5.00	4.64	93	64--148
1,1,1-Trichloroethane	5.00	4.23	85	52--162
1,1,2-Trichloroethane	5.00	4.51	90	52--150
Trichloroethene	5.00	4.51	90	71--157
Vinyl chloride	5.00	4.26	85	10--251
2-Chloroethylvinyl ether	5.00	4.30	86	10--305
Bromodichloromethane	5.00	4.37	87	35--155
Bromoform	5.00	4.58	92	45--169
Chlorodibromomethane	5.00	4.66	93	53--149
Chloroform	5.00	4.37	87	51--138
Bromomethane	5.00	4.50	90	10--242
Chloroethane	5.00	4.56	91	14--230
Chloromethane	5.00	4.15	83	10--273
2-Chlorotoluene	5.00	4.52	90	60--140
1,3-Dichlorobenzene	5.00	4.54	91	59--156
Dichlorodifluoromethane	5.00	3.18	64	60--140
1,1-Dichloroethane	5.00	4.24	85	59--155
cis-1,3-Dichloropropene	5.00	4.60	92	10--227
trans-1,3-Dichloropropene	5.00	4.97	99	17--183
1,1,2,2-Tetrachloroethane	5.00	4.48	90	46--157
Trichlorofluoromethane	5.00	4.35	87	17--181

✓

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
1,2-Dichloroethane d4	10	10.3	103	74--127
Toluene d8	10	10.4	104	80--120
p-Bromofluorobenzene	10	9.95	99	80--120

✓

REPORT COMMENTS: None

Analyst: ________ Reviewing Supervisor: ________ /chem/5971A.i/va120601.b/dec060301003.d

Lab Nos.: 001-01-60499 - 019-01-6049
Date: 30-NOV-01
Received by: Justin McMillan
Logged In by: Justin McMillan

SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

Chain of Custody Form Completed & Signed	Yes	Comments:
Chain of Custody Seal	Yes	Comments:
Intact	Yes	Comments:
Signature Match Chain of Custody vs. Seal	Yes	Comments:
Temperature Received	4 C	Comments:
Samples Received Within Holding Time	Yes	Comments:
Samples Received in Proper Containers	Yes	Comments:
Samples Received Properly Preserved(1)	N/A	Comments:

(1)Acid preservation of samples for volatile organics is not evaluated on this form. Any preservation problems encountered for these samples are noted on the analytical parameter report pages.

Record of client contact:

Who: By: Date/Time:

Method of Shipping: Bus

Additional comments:

Seals
4°C
Bus

ENVIROCON, INC.

CHAIN OF CUSTODY RECORD

PROJ. NO. 140101
PROJECT NAME BN/Livingston
SAMPLERS: (Signature) Dan McCaffery

SAMPLED VOLUME	DATE	TIME	COMP.	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	601 (VOCA)					REMARKS
40 ml	11/26/01	3:30		X	140101-1775-A	1	X			001-01-60499		Note – 2nd container
		4:30			1776					002		from each sample ~~to~~
	11/27/01	3:10			1777					003		to follow in separate
		3:15			1778					004		shipment.
		2:45			1779					005		
		4:40			1780					006		send results:
	11/28/01	10:45			1781					007		
		11:45			1782					008		attn: Dan McCaffery
		12:30			1783					009		Envirocon ✓
		13:15			1784					010		PO Box 16655
		3:45			1785					011		Missoula, MT
		4:50			1786					012		59808
	11/29/01	9:40			1787					013		
		11:45			1788					014		ph – (406) 523-1186
		12:20			1789					015		Fax 543-7987

~~Relinquished (Signature)~~	~~Date/Time~~	~~Received by: (Signature)~~	
3:00		1790	016
3:30		1791	017

~~Relinquished (Signature)~~	~~Date/Time~~	~~Received by: (Signature)~~	
4:30		1792	018
5:00		1793	019

Relinquished by: (Signature)	Date/Time		Received by: (Signature)
Dan McCaffery	11/29/01	9:30 PM	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Chain of Custody Seal:

Intact? [✓ yes] no) ______

Lab Personnel (receiving)

Signature: ______ 11/30/01 08:30

Remarks

Split Samples:
[] Accepted [] Declined ______
Signature

ENVIROCON, INC.

CHAIN OF CUSTODY RECORD

PROJ. NO. 140101

PROJECT NAME BN/Livingston

SAMPLERS: (Signature) Dan McCaffery

SAMPLED VOLUME	DATE	TIME	COMP.	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	VOCs by 601		REMARKS
40 ml	11/26/01	3^{30}		X	140101-1775-B	1	X	001-01-60499	Note: These are the 2nd
		4^{30}			1776			002	(B) of sample pairs; the
	11/27/01	3^{10}			1777			003	first of set (A) was shipped
		3^{15}			1778			004	1 day earlier.
		2^{45}			1779			005	
		4^{40}			1780			006	send results:
	11/28/01	10^{45}			1781			007	
		11^{25}			1782			008	attn: Dan McCaffery
		12^{30}			1783			009	Envirocon
		13^{15}			1784			010	PO Box 16655
		3^{15}			1785			011	Missoula MT
		4^{20}			1786			012	59808
	11/29/01	9^{40}			1787			013	
		11^{15}			1788			014	ph - (406) 523-1186
		12^{20}			1789			015	Fax - 543-7987
		3^{20}			1790	016			
		3^{30}			1791	017			
		4^{30}			1792	018			
		5^{00}			1793	019			

~~Relinquished (Signature)~~ ~~Date/Time~~ ~~Received by: (Signature)~~

~~Relinquished (Signature)~~ ~~Date/Time~~ ~~Received by: (Signature)~~

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Dan McCaffery	11/30/01 9AM	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Chain of Custody Seal:

Intact? [✓ yes]/no

Lab Personnel (receiving)

Signature: 11/30/01 16:00

Remarks

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

December 19, 2001

Dan McCaffery
Envirocon, Inc.
PO Box 16655
Missoula, MT 59808

Dear Dan:

On November 30, 2001, nineteen (19) samples, represented by our laboratory number, 001-019-01-60499 were submitted to our laboratory for analysis.

The test results and quality assurance were reviewed and approved by the undersigned.

Reviewed by: ______________________________

NOVEMBER 2001

MDEQ SPLIT GROUND WATER SAMPLE RESULTS

ENERGY LABORATORIES

ENERGY LABORATORIES, INC. • P.O. Box 30916 • 1120 South 27th Street • Billings, MT 59107-0916
800-735-4489 • 406-252-6325 • 406-252-6069 fax • eli@energylab.com

CEIVED
DEC 27 2001
Department of
Environmental Quality
Remediation Division

EPA METHOD 8260B

Client: **MT Dept of Environmental Quality**
Sample ID: MW-12
Project Info: LIVINGSTON SHOP COMPLEX
Lab ID: 001-01-91658
Matrix: WATER; pH= < 2

Date Reported: 12/17/01
Date Sampled: 11/29/01 11:50
Date Received: 11/30/01
Date Analyzed: 12/06/01 10:44

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
71-43-2	Benzene	ND	1.0
108-86-1	Bromobenzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform	ND	1.0
74-83-9	Bromomethane	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane	ND	1.0
110-75-8	2-Chloroethylvinyl ether	ND	1.0
67-66-3	Chloroform	ND	1.0
74-87-3	Chloromethane	ND	1.0
95-49-8	2-Chlorotoluene	ND	1.0
106-43-4	4-Chlorotoluene	ND	1.0
124-48-1	Chlorodibromomethane	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
74-95-3	Dibromomethane	ND	1.0
95-50-1	1,2-Dichlorobenzene	ND	1.0
541-73-1	1,3-Dichlorobenzene	ND	1.0
106-46-7	1,4-Dichlorobenzene	ND	1.0
75-71-8	Dichlorodifluoromethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethene	ND	1.0
156-59-2	cis-1,2-Dichloroethene	ND	1.0
156-60-5	trans-1,2-Dichloroethene	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
100-41-4	Ethylbenzene	ND	1.0
1634-04-4	Methyl-t-butyl ether	ND	1.0
75-09-2	Methylene chloride	ND	1.0
78-93-3	Methyl ethyl ketone	ND	10
100-42-5	Styrene	ND	1.0
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
127-18-4	**Tetrachloroethene**	**3.3**	1.0
108-88-3	Toluene	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
79-01-6	Trichloroethene	ND	1.0
75-69-4	Trichlorofluoromethane	ND	1.0

EPA METHOD 8260B(Continued)

Client:	**MT Dept of Environmental Quality**	Date Reported:	12/17/01
Sample ID:	MW-12	Lab ID:	001-01-91658

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
96-18-4	1,2,3-Trichloropropane	ND	1.0
75-01-4	Vinyl chloride	ND	1.0
108383/106423	m+p-Xylenes	ND	1.0
95-47-6	o-Xylene	ND	1.0
01330-20-7	Total Xylenes	ND	1.0

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(μg/L) ADDED	CONCENTRATION(μg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
Dibromofluoromethane	10	9.91	99	74--121
1,2-Dichloroethane d4	10	8.18	82	72--116
Toluene d8	10	11.1	111	85--115
p-Bromofluorobenzene	10	9.14	91	87--124

REPORT COMMENTS: None

Analyst: TRR
Reviewed:

QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 12/17/01
Date Analyzed: 12/06/01 09:57

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (µg/L)*	*LIMIT OF QUANTITATION(µg/L)*
71-43-2	Benzene	ND	1.0
108-86-1	Bromobenzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform	ND	1.0
74-83-9	Bromomethane	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane	ND	1.0
110-75-8	2-Chloroethylvinyl ether	ND	1.0
67-66-3	Chloroform	ND	1.0
74-87-3	Chloromethane	ND	1.0
95-49-8	2-Chlorotoluene	ND	1.0
106-43-4	4-Chlorotoluene	ND	1.0
124-48-1	Chlorodibromomethane	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
74-95-3	Dibromomethane	ND	1.0
95-50-1	1,2-Dichlorobenzene	ND	1.0
541-73-1	1,3-Dichlorobenzene	ND	1.0
106-46-7	1,4-Dichlorobenzene	ND	1.0
75-71-8	Dichlorodifluoromethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethene	ND	1.0
156-59-2	cis-1,2-Dichloroethene	ND	1.0
156-60-5	trans-1,2-Dichloroethene	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
100-41-4	Ethylbenzene	ND	1.0
1634-04-4	Methyl-t-butyl ether	ND	1.0
75-09-2	Methylene chloride	ND	1.0
78-93-3	Methyl ethyl ketone	ND	10
100-42-5	Styrene	ND	1.0
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
127-18-4	Tetrachloroethene	ND	1.0
108-88-3	Toluene	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
79-01-6	Trichloroethene	ND	1.0
75-69-4	Trichlorofluoromethane	ND	1.0

QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK (Continued)

Sample ID: Quality Assurance Method Blank
Matrix: WATER
Date Reported: 12/17/01
Date Analyzed: 12/06/01 09:57

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
96-18-4	1,2,3-Trichloropropane	ND	1.0
75-01-4	Vinyl chloride	ND	1.0
108383/106423	m+p-Xylenes	ND	1.0
95-47-6	o-Xylene	ND	1.0
01330-20-7	Total Xylenes	ND	1.0

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
Dibromofluoromethane	10	10.2	102	74--121
1,2-Dichloroethane d4	10	10.1	101	72--116
Toluene d8	10	11.2	112	85--115
p-Bromofluorobenzene	10	10.8	108	87--124

REPORT COMMENTS: None

Analyst: trr
Reviewed:

QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 12/17/01
Date Analyzed: 12/13/01 09:57

C.A.S. #	TARGET COMPOUNDS	CONCENTRATION (µg/L)	LIMIT OF QUANTITATION(µg/L)
71-43-2	Benzene	ND	1.0
108-86-1	Bromobenzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform	ND	1.0
74-83-9	Bromomethane	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane	ND	1.0
110-75-8	2-Chloroethylvinyl ether	ND	1.0
67-66-3	Chloroform	ND	1.0
74-87-3	Chloromethane	ND	1.0
95-49-8	2-Chlorotoluene	ND	1.0
106-43-4	4-Chlorotoluene	ND	1.0
124-48-1	Chlorodibromomethane	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
74-95-3	Dibromomethane	ND	1.0
95-50-1	1,2-Dichlorobenzene	ND	1.0
541-73-1	1,3-Dichlorobenzene	ND	1.0
106-46-7	1,4-Dichlorobenzene	ND	1.0
75-71-8	Dichlorodifluoromethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethene	ND	1.0
156-59-2	cis-1,2-Dichloroethene	ND	1.0
156-60-5	trans-1,2-Dichloroethene	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
100-41-4	Ethylbenzene	ND	1.0
1634-04-4	Methyl-t-butyl ether	ND	1.0
75-09-2	Methylene chloride	ND	1.0
78-93-3	Methyl ethyl ketone	ND	20
100-42-5	Styrene	ND	1.0
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
127-18-4	Tetrachloroethene	ND	1.0
108-88-3	Toluene	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
79-01-6	Trichloroethene	ND	1.0
75-69-4	Trichlorofluoromethane	ND	1.0

QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: METHOD BLANK (Continued)

Sample ID: Quality Assurance Method Blank
Matrix: WATER

Date Reported: 12/17/01
Date Analyzed: 12/13/01 09:57

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
96-18-4	1,2,3-Trichloropropane	ND	1.0
75-01-4	Vinyl chloride	ND	1.0
108383/106423	m+p-Xylenes	ND	1.0
95-47-6	o-Xylene	ND	1.0
01330-20-7	Total Xylenes	ND	1.0

ND= Indicates compound was analyzed for but not detected.

Runtime Quality Assurance Report

	CONCENTRATION(μg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
Dibromofluoromethane	10	9.44	94	74--121
1,2-Dichloroethane d4	10	10.8	108	72--116
Toluene d8	10	9.84	98	85--115
p-Bromofluorobenzene	10	9.60	96	80--120

REPORT COMMENTS: None

Analyst: TRR
Reviewed:

QUALITY ASSURANCE REPORT FOR EPA METHOD 8260B: REFERENCE STANDARD BLANK MATRIX SPIKE

Sample ID:	Quality Assurance Blank Matrix Spike	Date Reported:	12/17/01
Matrix:	WATER	Date Analyzed:	12/04/01 19:09

	CONCENTRATION(µg/L)		*PERCENT*	*ACCEPTANCE*
SPIKE COMPOUNDS	*ADDED*	*MEASURED*	*RECOVERY*	*RANGE*
Benzene	5.00	5.51	110	77–122
Bromobenzene	5.00	5.64	113	80–121
Bromochloromethane	5.00	4.87	97	71–130
Bromodichloromethane	5.00	5.38	108	77–124
Bromoform	5.00	5.31	106	71–128
Bromomethane	5.00	5.75	115	46–148
Carbon tetrachloride	5.00	5.55	111	71–128
Chlorobenzene	5.00	5.40	108	81–121
Chloroethane	5.00	4.75	95	66–132
2-Chloroethylvinyl ether	5.00	4.78	96	49–147
Chloroform	5.00	4.91	98	75–123
Chloromethane	5.00	4.97	99	47–140
2-Chlorotoluene	5.00	5.94	119	82–126
4-Chlorotoluene	5.00	5.96	119	81–126
Chlorodibromomethane	5.00	5.38	108	77–122
1,2-Dibromoethane	5.00	5.41	108	77–126
Dibromomethane	5.00	5.35	107	78–125
1,2-Dichlorobenzene	5.00	5.41	108	77–128
1,3-Dichlorobenzene	5.00	5.57	111	80–123
1,4-Dichlorobenzene	5.00	5.73	115	80–123
Dichlorodifluoromethane	5.00	4.59	92	44–134
1,1-Dichloroethane	5.00	5.26	105	77–124
1,2-Dichloroethane	5.00	5.46	109	69–126
1,1-Dichloroethene	5.00	5.29	106	77–125
cis-1,2-Dichloroethene	5.00	4.84	97	73–125
trans-1,2-Dichloroethene	5.00	5.62	112	79–125
1,2-Dichloropropane	5.00	5.56	111	71–126
1,3-Dichloropropane	5.00	5.53	111	77–126
2,2-Dichloropropane	5.00	4.84	97	70–141
1,1-Dichloropropene	5.00	5.41	108	75–121
cis-1,3-Dichloropropene	5.00	5.14	103	77–142
trans-1,3-Dichloropropene	5.00	5.45	109	70–128
Ethylbenzene	5.00	5.73	115	80–123
Methyl-t-butyl ether	5.00	4.96	99	69–134
Methylene chloride	5.00	5.19	104	75–127
Methyl ethyl ketone	50	47.4	95	57–128
Styrene	5.00	5.55	111	77–118
1,1,1,2-Tetrachloroethane	5.00	5.44	109	77–124
1,1,2,2-Tetrachloroethane	5.00	5.60	112	76–130
Tetrachloroethene	5.00	5.53	111	74–125
Toluene	5.00	5.96	119	78–125
1,1,1-Trichloroethane	5.00	5.56	111	73–126
1,1,2-Trichloroethane	5.00	5.26	105	76–129
Trichloroethene	5.00	5.52	110	78–125
Trichlorofluoromethane	5.00	5.56	111	52–132
1,2,3-Trichloropropane	5.00	5.46	109	77–134
Vinyl chloride	5.00	5.43	109	66–132
m+p-Xylenes	10	11.8	118	78–126
o-Xylene	5.00	5.99	120	78–127
Total Xylenes	15	17.8	119	60–140

Runtime Quality Assurance Report

	CONCENTRATION(µg/L)		PERCENT	ACCEPTANCE
SYSTEM MONITORING COMPOUNDS	ADDED	MEASURED	RECOVERY	RANGE
Dibromofluoromethane	10	10.5	105	74–121
1,2-Dichloroethane d4	10	10.3	103	72–116
Toluene d8	10	10.5	105	85–115
p-Bromofluorobenzene	10	10.5	105	87–124

REPORT COMMENTS: None

Analyst: trr
Reviewed:

Lab Nos.: 001-01-91658 - 002-01-91658

Date: 30-NOV-01

Received by: Barb Schuler

Logged In by: Barb Schuler

SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

Chain of Custody Form Completed & Signed	Yes	Comments:
Chain of Custody Seal	No	Comments:
Intact	N/A	Comments:
Signature Match Chain of Custody vs. Seal	N/A	Comments:
Temperature Received	5.0C	Comments:
Samples Received Within Holding Time	Yes	Comments:
Samples Received in Proper Containers	Yes	Comments:
Samples Received Properly Preserved(1)	Yes	Comments:

(1)Acid preservation of samples for volatile organics is not evaluated on this form. Any preservation problems encountered for these samples are noted on the analytical parameter report pages.

Record of client contact:

Who: By: Date/Time:

Method of Shipping: Hand Del

Additional comments:

EPA METHOD 8260B

Client: **MT Dept of Environmental Quality**
Sample ID: L-87-5
Project Info: LIVINGSTON SHOP COMPLEX
Lab ID: 002-01-91658
Matrix: WATER; pH= < 2

Date Reported: 12/17/01
Date Sampled: 11/29/01 12:20
Date Received: 11/30/01
Date Analyzed: 12/13/01 10:42

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
71-43-2	Benzene	ND	1.0
108-86-1	Bromobenzene	ND	1.0
74-97-5	Bromochloromethane	ND	1.0
75-27-4	Bromodichloromethane	ND	1.0
75-25-2	Bromoform	ND	1.0
74-83-9	Bromomethane	ND	1.0
56-23-5	Carbon tetrachloride	ND	1.0
108-90-7	Chlorobenzene	ND	1.0
75-00-3	Chloroethane	ND	1.0
110-75-8	2-Chloroethylvinyl ether	ND	1.0
67-66-3	Chloroform	ND	1.0
74-87-3	Chloromethane	ND	1.0
95-49-8	2-Chlorotoluene	ND	1.0
106-43-4	4-Chlorotoluene	ND	1.0
124-48-1	Chlorodibromomethane	ND	1.0
106-93-4	1,2-Dibromoethane	ND	1.0
74-95-3	Dibromomethane	ND	1.0
95-50-1	1,2-Dichlorobenzene	ND	1.0
541-73-1	1,3-Dichlorobenzene	ND	1.0
106-46-7	1,4-Dichlorobenzene	ND	1.0
75-71-8	Dichlorodifluoromethane	ND	1.0
75-34-3	1,1-Dichloroethane	ND	1.0
107-06-2	1,2-Dichloroethane	ND	1.0
75-35-4	1,1-Dichloroethene	ND	1.0
156-59-2	**cis-1,2-Dichloroethene**	**1.5**	1.0
156-60-5	trans-1,2-Dichloroethene	ND	1.0
78-87-5	1,2-Dichloropropane	ND	1.0
142-28-9	1,3-Dichloropropane	ND	1.0
594-20-7	2,2-Dichloropropane	ND	1.0
563-58-6	1,1-Dichloropropene	ND	1.0
10061-01-5	cis-1,3-Dichloropropene	ND	1.0
10061-02-6	trans-1,3-Dichloropropene	ND	1.0
100-41-4	Ethylbenzene	ND	1.0
1634-04-4	Methyl-t-butyl ether	ND	1.0
75-09-2	Methylene chloride	ND	1.0
78-93-3	Methyl ethyl ketone	ND	20
100-42-5	Styrene	ND	1.0
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0
127-18-4	**Tetrachloroethene**	**43(D)**	10
108-88-3	Toluene	ND	1.0
71-55-6	1,1,1-Trichloroethane	ND	1.0
79-00-5	1,1,2-Trichloroethane	ND	1.0
79-01-6	**Trichloroethene**	**2.8**	1.0
75-69-4	Trichlorofluoromethane	ND	1.0

EPA METHOD 8260B(Continued)

Client: **MT Dept of Environmental Quality**
Sample ID: L-87-5

Date Reported: 12/17/01
Lab ID: 002-01-91658

C.A.S. #	*TARGET COMPOUNDS*	*CONCENTRATION (μg/L)*	*LIMIT OF QUANTITATION(μg/L)*
96-18-4	1,2,3-Trichloropropane	ND	1.0
75-01-4	Vinyl chloride	ND	1.0
108383/106423	m+p-Xylenes	ND	1.0
95-47-6	o-Xylene	ND	1.0
01330-20-7	Total Xylenes	ND	1.0

ND= Indicates compound was analyzed for but not detected.

D= Value was derived from a 10 times dilution.

Runtime Quality Assurance Report

SYSTEM MONITORING COMPOUNDS	CONCENTRATION(µg/L) ADDED	CONCENTRATION(µg/L) MEASURED	PERCENT RECOVERY	ACCEPTANCE RANGE
Dibromofluoromethane	10	9.93	99	74--121
1,2-Dichloroethane d4	10	10.9	109	72--116
Toluene d8	10	10.3	103	85--115
p-Bromofluorobenzene	10	9.66	97	80--120

REPORT COMMENTS: None

Analyst: TRR
Reviewed:

APPENDIX B

DATA VALIDATION REPORT FOR GROUND WATER ANALYSES

DATA VALIDATION REPORT FOR GROUND WATER ANALYSES
MAY & NOVEMBER 2001 SAMPLING EVENTS

1.0 INTRODUCTION

Ground water analytical data validation levels have been established in accordance with criteria described in Appendix 1.A, Volume V of the Final Remedial Investigation Report (Envirocon, 1994). Data validation levels and codes for the Livingston Rail Yard project are based on the U.S. Environmental Protection Agency Region VIII guidance, "Evaluation Criteria for Existing Data From CERCLA Study Areas," Revision 1, January 5, 1985. Table 1.0 lists samples collected during the May and November 2001 sampling rounds.

2.0 EVALUATION OF BLANK ANALYSES

Laboratory and field blanks were analyzed for these two sampling rounds as summarized on Table 2.0. All the field blanks were trip blanks, whereas all the laboratory blanks were reagent or method blanks.

Table 2.0
Field and Laboratory Blanks

Sample Number	Sample Type	Laboratory ID #	Sample Date	EPA Method
140101-1747	Trip Blank	010-01-53846	5/17/01	624
N/A	Method Blank	N/A	5/29/01	624
N/A	Method Blank	N/A	5/30/01	624
140101-1766	Trip Blank	011-01-53992	5/22/01	624
N/A	Method Blank	N/A	5/30/01	624
N/A	Method Blank	N/A	5/31/01	624
N/A	Reagent Blank	N/A	6/1/01	524.2
N/A	Method Blank	N/A	12/6/01	624
N/A	Method Blank	N/A	12/6/01	624

All 3 trip blanks contained low concentrations of chloroform, while 2 of the 3 also contained low concentrations of bromodichloromethane and chlorodibromomethane. In the past, these compounds have not been found in site ground water, and are assumed to be chlorination by-products of the supermarket-distributed distilled water. No compounds were detected in any laboratory reagent or method blanks. Surrogate recoveries were within acceptable QC limits. Therefore, no changes to the validation levels of primary samples are necessary due to blank analyses.

3.0 EVALUATION OF DUPLICATE ANALYSES

Five sets of field duplicates and one set of laboratory duplicates were analyzed during the May and November 2001 sampling rounds. Table 3.0 summarizes the sample numbers and dates of the duplicate samples.

Table 3.0
Duplicate Sample Analyses

Sample Number	Sample Location	Sample Type	Laboratory ID #	Sample Date	EPA Method
140101-1745	L-88-10	Primary Sample	008-01-53846	5/17/01	624
140101-1746	L-88-10	Field Duplicate	009-01-53846	5/17/01	624
140101-1757	89-4	Primary Sample	002-01-53992	5/21/01	624
140101-1758	89-4	Field Duplicate	003-01-53992	5/21/01	624
140101-1771	92-1	Primary Sample	016-01-53992	5/23/01	624
140101-1772	92-1	Field Duplicate	017-01-53992	5/23/01	624
140101-1777	89-9	Primary Sample	003-01-60499	12/27/01	624
140101-1778	89-9	Field Duplicate	004-01-60499	12/27/01	624
140101-1780	90-3	Primary Sample	006-01-60499	11/27/01	624
140101-1780	90-3	Lab Duplicate	DP6-01-60499 Dup	11/27/01	624
140101-1790	94-1	Primary Sample	016-01-60499	11/29/01	624
140101-1791	94-1	Field Duplicate	017-01-60499	11/29/01	624

No duplicate pair analytes exceeded a relative percent difference of 30%. Therefore, no changes to the validation levels of primary samples are necessary due to duplicate analyses.

4.0 EVALUATION OF HOLDING TIMES

All of the samples analyzed by EPA Methods 601 and 524.2 were to be preserved by being acidified to pH values below 2.0. Properly acidified samples can be stored for up to 14 days prior to analysis by EPA Method 624 or 524.2. For these two methods, unpreserved samples can be stored for up to 7 days before analysis.

In the past, the laboratory has recommended adding two drops of hydrochloric acid per 40 milliliter vial to achieve pH values below 2.0. As the laboratory report notations demonstrate, two drops of HCl is frequently inadequate, and has recently changed their recommendion to 5 drops of HCl per vial.

Seventeen of the 34 May ground water samples had laboratory pH values above the 2.0 recommended limit for a 14-day holding time. Of these 17 high pH samples, 6 (Nos. 140101-1756, -1763, -1767, -1768, -1771 & -1774) had slightly elevated pH values of 3.0 or 4.0 and were held for only 8 or 9 days before analysis. Based on holding times alone, these 6 samples will not have their validation levels changed.

Three (Nos. 140101-1742, -1744, & -1750) of the 17 elevated pH samples had slightly elevated pH values of 4.0 and were held for 11 or 12 days before analysis. Another 3 (Nos. 140101-1765, -1769, & -1772) of the 17 elevated pH samples had pH values of 7.0 but were held for only 8 or 9 days before analysis. Unless other QC problems are associated with these 6 samples, they will not have their validation levels changed.

Five of the 17 elevated pH samples had pH values of 7.0 and were held for between 11 and 12 days before analysis. Based on their holding times, the following 5 samples will be validated as qualitative:

- 140101-1745
- 140101-1746
- 140101-1748
- 140101-1752
- 140101-1753

All 19 of the samples collected during the November 2002 ground water sampling event were adequately preserved and were analyzed within 14 days of sampling.

5.0 EVALUATION OF MATRIX, BLANK, AND SURROGATE SPIKE RESULTS

All matrix spike, blank spike, and surrogate spike recoveries were within acceptable limits except for sample matrix spike recoveries of 2-chloroethylvinyl ether in two samples (Sample Nos. –1743 and –1785). This analyte will be downgraded to “qualitative” status for these two samples.

6.0 MISCELLANEOUS QA/QC EVALUATIONS

(None)

7.0 VALIDATION LEVEL ASSIGNMENTS

All analytical results for the May and November 2001 sampling rounds are acceptable as quantitative data (code ‘B’), except those listed on Table 4.0, which have been downgraded to qualitative status (code ‘A’).

TABLE 4
Analytical Results Degraded to Qualitative Status

Sample Location	Sample Date	Sample Number	Chemical Name	Conc.	Validation Qualifier	Reason
L-88-13	5/17/01	-1743	2-chloroethylvinyl ether	<1.0 ug/l	A	M.S. recovery
L-88-10	5/17/01	-1745	all 601 analytes	various	A	holding time
L-88-10dup	5/17/01	-1746	all 601 analytes	various	A	holding time
L-87-3	5/18/01	-1748	all 601 analytes	various	A	holding time
LS-11	5/18/01	-1752	all 601 analytes	various	A	holding time
90-3	5/18/01	-1753	all 601 analytes	various	A	holding time
92-2	11/28/01	-1785	2-chloroethylvinyl ether	<1.0 ug/l	A	M.S. recovery

LEFT

彩

照

姓名：__________
Name

职务：__________
Post

单位：__________
Unit

No: Date:

002 装得快 文具

APRIL2013

24ColorCard CameraTrax.com